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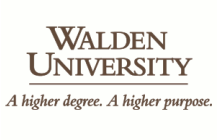

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The Adoption and Diffusion of the Air Taxi/Air Charter Travel Innovation

Joseph Paul Leader
Walden University

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Walden University

College of Management and Technology

This is to certify that the doctoral dissertation by

Joseph Paul Leader

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2018

Abstract

The Adoption and Diffusion of the Air Taxi/Air Charter Travel Innovation

by

Joseph Paul Leader

MBA / TM, University of Phoenix, 2002

MA, Emory University, 1995

BA, Emory University, 1993

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Applied Management and Decision Science

Walden University

May 2018

Abstract

The inefficient use and knowledge of direct, on-demand air taxi/air charter flights in the United States was the topic of this dissertation. The general problem studied was the inefficient use of air transportation options by business travelers in the United States. The specific problem was how business travelers in the United States learn of and thereby elect to embrace a newer air travel option. Using Rogers's diffusion of innovations theory as the framework, the dissemination of air travel choices made by business travelers using ImagineAir air taxi service in the United States was explored via a qualitative case study research design methodology. Thirty-five semistructured interviews and matching customer database information provided data for the study, Data were later analyzed for emergent themes and codes using MAXQDA software. Key research questions included communication of the innovation, business travelers' perceptions of the innovation, timeframe of innovation adoption, business environment enabling the innovation adoption, and the Rogers self-described adopter type. The results showed that compatibility, relative advantage, risk, and complexity influence the perception of business travelers about air taxi services. Based on the research, the course of action suggests that business travelers will most rapidly embrace air taxi service via internet dissemination of this new option. With continued success in dissemination, positive social change will come in the form of efficiencies as business travelers use more than 5,000 virtually idle airports and over 7,000 on-demand air taxi aircraft as highlighted by U.S. government studies further bolstered by this research.

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Dedication

I have long described my Ph.D. as my personal Mount Everest of academic achievement. I dedicate this dissertation to the family and friends that inspired me to make the climb and supported me during the endless ascent. My wife, Dr. Jeanette Leader, acted as my chief benefactor and ever-loving muse on this journey. I have always been immensely proud that my wife is a medical doctor, but I longed for the day that we could be addressed as Drs. Joe and Jeanette Leader. That day has arrived. My amazing parents set the bar for me long ago to climb this academic mountain as they both hold Ph.D. degrees from the University of Illinois at Champaign-Urbana that they carried with them successfully into the business world. Dr. Dan Clanton, Dr. Chris Caplinger, and Dr. W. Geoff West are best friends from high school, college, and today respectively. Each earned a Ph.D. degree during our friendship and furthered my desire to join them. The business mentor of my 30s, Phil Bullinger, provided the inspirational insights and initial financial support via our corporation that paid for much of the coursework of this monumental degree. Finally, I want to dedicate this dissertation especially to the wonderful daughter that joined me in this journey: Jenna Victoria Leader. While you are now 9 years old, I often looked to you for encouragement and inspiration. Hard work and challenges make us ever stronger and lead to success. I wanted to see this through because I know that one day, you will follow in my footsteps, follow in your mother's footsteps, and realize your fullest abilities. Thanks, love, and good karma to each of you for helping me reach the summit of this proverbial mountain. Never give up on the upward climb to your fullest potential in life. I dedicate this dissertation to each of you.

Acknowledgments

In life, there are the people that we have as our family and those that we choose as our friends and mentors. Years ago, I met Dr. Stephanie Hoon as a kindred spirit at Walden University. We shared similar interests and styles. Initially, I asked her to be a member of my dissertation committee. Eventually, I asked her to chair my dissertation committee. Over these years, she has offered steadfast support despite an onslaught of setbacks. As a member of my committee, she watched as a centerpiece company for my initial dissertation fell into bankruptcy, eliminating the possibility of completing my research quickly and easily. From there, I moved to a quantitative dissertation, incorrectly believing that the format would prove to be the most expedient course of study. After 13 additional revisions over the course of several years, I finally yielded and heeded Dr. Hoon's advice to pursue the qualitative study that would best serve the emerging air taxi marketplace. Thank you for believing in me, never giving up on me, and being a positive and uplifting force during my darkest days when I wanted to simply give up. Completing my dissertation has been akin to forging a diamond in the rough. There were many times that I felt that I might break under the immense pressure, but under your guidance I have produced the rough diamond that I knew was always there.

My deepest gratitude also goes out to Dr. Robert Kilmer. When we first met in person for brunch in Harrisburg, Pennsylvania, Dr. Kilmer gave me sage advice and excellent words of caution. He held out questions and concerns about my quantitative approach. I believed that they could be overcome, but after many revisions, Dr. Kilmer's premonitions proved correct. Applying quantitative analyses to a completely new arena

was the wrong approach. Only by building a qualitative foundation will future researchers have the structure required for successful quantitative execution. Thank you, Dr. Kilmer, for holding me to the higher standard that builds a stronger Walden University and studier academic foundation for others.

Finally, I would like to issue a special acknowledgment to Walden University. Initially, I approached the Emory University Goizueta Business School for my Ph.D. Emory University admissions stressed to me that I would need to give up corporate life to participate. They wanted my full-time Ph.D. commitments at Emory, followed by a commitment thereafter to be a professor that would frequently publish. I received my bachelor's degree and first master's degree from Emory University, but I had no interest in removing myself from the corporate business world that had inspired me to attain my Ph.D. I read an article in the *U.S. News & World Report* suggesting that Walden University was one of the best Ph.D. programs in the country for a person like myself seeking to complete a doctorate part-time. I have deeply appreciated Walden University for holding me to the highest standards of Ph.D. classwork, study, research, and writing. Thank you for enabling countless bright people to attain the Ph.D. that might otherwise be unattainable in a corporate environment.

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Chapter 1: Introduction to the Study

Introduction

The potential exists for an air travel revolution in the United States. On the surface, the commercial airline structure in the United States stands as one of the most robust air transportation systems in the world. As of 2017, a total of 61 scheduled commercial airlines—including market leaders such as American, Delta, Southwest, and United—connect over 502 airports across the country, carrying 741.6 million passengers per year (USDOT, 2018). Beyond these commercial airlines and airports, there exists a broader airport network of over 5,000 underutilized airports and over 7,000 minimally used, flight-ready, air taxi/air charter small aircraft in the United States. An air taxi/air charter is "small aircraft [that] provide[s] passengers with near-on-demand transportation from an airport nearest the passenger's travel point of origin to an airport nearest the passenger's travel point of destination" (Mane & Crossley, 2009, p. 1222) . Under FAA terminology referring to on-demand air services, the terms *air charter* or *air taxi* may be used interchangeably (Checchio, 2011; McGee, 2015; USDOT, 2018). The underused airports are open for the public to use at any time via on-demand air taxi aircraft (Checchio, 2011, p. 31). The aircraft are the focus of this dissertation, in which the researcher explored air taxi adoption among business travelers, following Rogers's (1983) diffusion of innovations model in the United States. ImagineAir, the largest, low-cost air taxi operator of its kind in the United States, was the focal point of this geographically centered case study (Seward, 2014; USDOT, 2018).

Operating under U.S. Federal Aviation Administration (FAA) regulations, Part 135 rules for on-demand passenger transportation, these air taxi flights are small aircraft

chartered by one or more passengers from any origination to any destination at any time desired (Fagerholt, Foss, & Horgen, 2009, p. 1173). The terms *air taxi* and *air charter* are used interchangeably in FAA nomenclature, but in this study, the researcher primarily used the term *air taxi* to emphasize the on-demand nature of air transportation (Checchio, 2001). In the past decade, technologically advanced small aircraft have given their operators the ability to significantly lower the price point for air taxi travel (Harrison, Gershkoff, Church, & Poole, 2013). If more actively used by travelers, then these air taxi aircraft could dramatically democratize travel, enabling business travelers to fly directly to nearly any destination in the United States. In an exhaustive review, the current researcher located no studies wherein researchers explored the adoption and diffusion of air taxi transportation. "Innovations in any industry are rarely adopted immediately after their introduction. As with any transportation innovation, the path from awareness to implementation may be an arduous one" (Checchio, 2001, p. 91). As a study in innovation diffusion, a geographic boundary enabled a study of defined relevance. This area aligned directly with the focal air taxi company in this study, ImagineAir, which offers the largest air taxi fleet of its kind in the United States (Seward, 2014; USDOT, 2018).

In this study, the researcher applied the rigorously tested and academically grounded adoption and diffusion of innovations framework of Rogers. Rogers's (2003) approach enables objective understanding of how business travelers consider air taxi options alongside traditional commercial airline flights (Pinelli, 1997). This tactic builds upon previous research in which scholars demonstrated the period of time required to adopt transportation innovations in the United States (Ettlie & Vellenga, 1979).

This chapter begins with an outline of the air taxi phenomenon and captures how this change could lead to a significant social change in business travel methodology. The researcher then advances the narrative with a more detailed background summarizing complementary research literature to air taxi diffusion of innovations. From there, he highlights a knowledge gap and demonstrates why additional research on the air taxi phenomenon merits exploration. The researcher then builds on the problem statement in this section and presents the research problem, the study significance, the research framework, and existing research gaps. Next, the researcher presents the purpose of the study, which encapsulates the research paradigm, the intent of the study, and the phenomenon of interest. After stating the research questions, the researcher reviews both the theoretical and conceptual framework for the study. The researcher then advances into the core nature of the study. In the best tradition of academic research, the researcher will review key terms from both the air taxi sector and Rogers's (2003) diffusion of innovations theory. With this in place, the author progress to assumptions, scope, delimitations, limitations, and significance, before concluding the chapter with a summary.

Background

Social scientists have explored attitudes of business travelers and travel agents about air travel by air taxi. Researchers who have published in the *Journal of Air Transportation Worldwide* highlighted air taxi travel as the future mode of business travel, but one that remained an untapped secret to the clear majority of business travelers (Kaps, Gardner, & Hartung, 2001; USDOT, 2018). The authors of the article discovered that 72% of individuals at the companies surveyed had never considered the option of

travel via air taxi. Thus, only 28% of business travelers had ever considered air taxi travel. The secret of air taxi travel remains intact due to a major flaw in how individuals interested in air taxi travel would seek to learn more about the innovative new travel methodology. Most business travelers (68%) would turn to their corporate travel agent for information about air taxi travel (Kaps et al., 2001). In turn, only 2.3% of these corporate travel agents surveyed by the researchers had any knowledge of air taxi booking procedures, with 97.7% of all corporate travel agents stating that they had no knowledge of air taxi booking procedures (Kaps et al., 2001). An unknowledgeable corporate travel infrastructure resulted in a situation where air taxi travel remains relatively unknown by both business travelers and professional corporate travel agents (Checchio, 2011).

Despite this lack of market knowledge, researchers have created a forecasting model for air taxi use that predicted thousands of new air taxi flights in the years ahead (Baik et al., 2008; Stimpson, Cummings, Nneji, & Goodrich, 2017) . The authors indicated that business travelers would rapidly pull away from U.S. roads and into the skies on air taxis. The researchers, however, reached this prediction by studying if individuals would readily change their behavior as if they operated with computer-like efficiency calculations. These academic scientists failed to calculate the slow diffusion factor of the air taxi innovation (Baik et al., 2008; Stimpson et al., 2017).

In another study, business travelers identified specific reasons that they did not elect to take air taxis (Kaps et al., 2001). Business travelers cited the following reasons in order: price, perceived safety, lack of direct experience, unknowns about comfort, concerns about scheduling, and the potential of negative perception by others for taking

an air taxi flight. After ranking these items, the survey team asked participants a hypothetical question: If the cost-benefit analysis provided to them indicated that air taxi flights might be competitive with commercial airlines, then would they agree to re-examine implementing air taxi travel for their company? In total, 84% of the business participants said that they would consider air taxi travel(Kaps et al., 2001). Researchers have demonstrated that when business travelers accounted for the value of their total travel time, they would use air taxis more frequently (Baik et al., 2008; Stimpson et al., 2017). Checchio (2011) mirrored this sentiment on the business impact of air taxi travel by stating, “the value that business people place on their time may be greater than any fare premium associated with air taxi service” (Checchio, 2011, p. 84) which further stresses the importance and frequency of air travel.

From a diffusion of innovations perspective, researchers have demonstrated the Rogers (1983) theory in relation to aviation in several different studies (Checchio, 2011; Ettlie & Vellenga, 1979; Gorman, 1999; Hoskyns-Long, 2009; Huneycutt, 1996; Jarrett, 2003; Kehr, 2002; M. J. Moore, 1995; Palmer, 1993; Scholz, 2001; Shorter-Judson, 2000). This includes several management dissertations (Checchio, 2011; Ettlie & Vellenga, 1979; Gorman, 1999; Hoskyns-Long, 2009; Huneycutt, 1996; Jarrett, 2003; Kehr, 2002; M. J. Moore, 1995; Palmer, 1993; Scholz, 2001; Shorter-Judson, 2000) that highlight the diffusion of innovations theory framework to analyze preferences for change (Rogers, 2003). The authors of several related dissertations have used the Rogers framework to examine change. These include dissertations on the time period required for adoption of transportation innovations (Ettlie & Vellenga, 1979), the internet as a change agent (Huneycutt, 1996), e-business effects upon the aerospace industry (Jarrett,

2003), leadership effects upon higher education (Gorman, 1999), and new technology effects upon the telephone industry (Kehr, 2002). In other works utilizing this framework, researchers explored customer size effects upon the apparel industry (Scholz, 2001), gaming workshops upon educational techniques (Palmer, 1993), podcasting change effects upon education methodology (Hoskyns-Long, 2009), and technology effects upon growth in telemedicine (M. J. Moore, 1995). Shorter-Judson (2000) used the Rogers approach to understand attitudes toward air travel adoption and diffusion. In the study, Shorter-Judson demonstrated change in how people purchase airline tickets and left open a doorway for significant future research. Checchio (2011) demonstrated that the air taxi serves as a new American paradigm with a need for better integration into national aviation policy. Checchio (2011) also demonstrated the relevance of the Rogers model in understanding the reticence to change but did not propose a solution to test and accelerate adoption of change.

A change in transportation methodology represents one of the most fundamental shifts in social change (Kezar, 2011). At a certain point, changes in how individuals travel may reach a sufficient momentum to achieve a "takeoff velocity" of much broader adoption in the marketplace. For over a quarter of a century, the deregulation and denationalization of air carriers have afforded Americans with a wealth of new air travel choices (Borenstein & Rose, 2014; Whitelegg, 2005). In the past decade, consumers have shifted to low-cost carriers, like Southwest Airlines, as well as internet-based ticketing options (Brueckner, Lee, & Singer, 2013). At the higher end of the spectrum, many businesses have moved to expensive private jets for corporate travel (Claussen & O'Higgins, 2010). Researchers have given little consideration in these studies to

accelerating change in travel methods. Examining past efforts, there is a dearth of research on how to accelerate the change in advance of the adoption. This has created a significant gap in existing literature analyzing changes in air taxi travel adoption by business travelers in the United States. The gap left by the lack of research in this arena served as an inspiration for this dissertation; the researcher perceived a clear call to action to study the potential to accelerate the diffusion of the air taxi innovation amongst business air travelers in the United States.

U.S. government researchers have asserted the need for change regarding air taxi use in order to create more efficient use of air travel in the United States (Harrison et al., 2013; J. Wensveen, 2018). The full use of air transportation infrastructure may accelerate effective social change (Miller & Clarke, 2007). In the United States, the National Aviation and Space Administration (NASA) and the Federal Aviation Administration (FAA) worked together in creating a vision for the Small Aircraft Transportation System (SATS). The SATS researchers predicted much higher use of air taxi aircraft in the coming decades (Checchio, 2011; J. Wensveen, 2018). According to the FAA, a total of 741.6 million passengers boarded commercial airlines for domestic travel (USDOT, 2018). The FAA estimated that passenger demand will more than double by 2030, with approximately 1.3 billion commercial airline passengers. A mere 30 airports in the United States handle 72.6% of all commercial airline traffic (USDOT, 2018). In contrast, over 5,000 airports in the country remain virtually idle, despite being easily accessibly (Browne, St-Onge Ahmad, Beck, & Nguyen-Van-Tam, 2016; Harrison et al., 2013; LaHood, 2012, p. 5; USDOT, 2018). Officials at the FAA projected that commercial airline service to these 30 airports will continue to increase, while service to medium

hubs and smaller airports will continue to decrease (Shellabarger, 2011; USDOT, 2018). These large hub airports in the United States are outnumbered nearly 200:1 by smaller, more accessible airports used by air taxis. In the United States, 98% of the population lives within 20 miles of these underutilized secondary airports (Browne et al., 2016; Harrison et al., 2013; LaHood, 2012; USDOT, 2018). Despite this ease of access, only 2..48 million passengers traveled via air taxi flights domestically, as compared to 741.6 million commercial airline passengers traveling in the United States (USDOT, 2018). Air taxi flights rarely make use of congested commercial airports. According to FAA statistics, only 3% of air taxi take-offs and landings occur at the top 30 airports in the United States. In America, over 2,000 companies offer over 7,000 planes for hire as air taxi aircraft. These on-demand aircraft are used for an average of less than 1 hour per day, as compared to the near 80% available flight time utilizing of commercial aircraft (Boeing, 2013; FAA, 2013; USDOT, 2018). These statistics highlight a remarkably underutilized air travel infrastructure in the United States. If more business travelers used the air taxi innovation, the diffusion of that innovation could lead to a transformative social change in how Americans travel by air (Shellabarger, 2011). The present study is needed to explore the way in which people use air taxi travel and how it can be used more efficiently.

Problem Statement

In the United States, air travel lacks efficiency outside of major cities with the government spending $283 million per year for rural areas on flights that average only had 49% of their seats filled with a congressional requirement of only 10 passengers per day on any given route (Tang, 2017). NASA research indicated that air taxi travel may

serve as a key solution to this important U.S. air transportation issue (Stimpson et al., 2017). The problem addressed in this study is the inefficient use and knowledge of direct, on-demand, air taxi flights in the United States. With 30 hub airports in the United States overwhelmed by 72.6% of all commercial airline flights, U.S. government researchers have asserted need for change in air travel leveraging 5,000 virtually idle airports alongside over 7,000 available on-demand air taxi aircraft, but the researchers do not know how air taxi awareness will successfully be disseminated (Browne et al., 2016; Harrison et al., 2013; LaHood, 2012; USDOT, 2018). The general problem was the inefficient use of air transportation options by business travelers in the United States. The specific problem was how business travelers in the United States learn of, and thereby elect to embrace, a newer air travel option. According to the FAA, commercial airlines inadvertently cause $32.9 billion of damage to the American economy each year from flight delays linked to a highly inefficient air transportation system, forcing most passengers to take connecting flights to their final destination (Skaltsas, 2011). Only 63% of Americans lives within 20 miles of an airport offering any commercial airline flights. In contrast, 98% of Americans lives within 20 miles of one of nearly 5,000 underutilized secondary airports in the United States, which often feature on-demand air taxi service without major delays (Browne et al., 2016; Harrison et al., 2013; LaHood, 2012). These secondary airports offer efficient, direct, air taxi options to nearly any destination, but they remain unknown to the vast majority of business travelers (Cohen, 2010; Kaps et al., 2001).

As indicated in the background, this problem exists as a current, relevant, and significant issue in better understanding America's air transportation strategic options

(Browne et al., 2016; Harrison et al., 2013; LaHood, 2012). Previous researchers have demonstrated an overarching lack of knowledge of the air taxi option (Checchio, 2011) despite an overwhelming need for more time-efficient air travel alternatives (Baik et al., 2008; Stimpson et al., 2017). Aviation researchers, business travel professionals, and business travel stakeholders need to understand the impact of air taxi travel integration as a newly perceived innovation by traveling business professionals (Cohen, 2010; Kaps et al., 2001; Taneja, 2016b). U.S. government researchers have suggested that there will be a broader adoption of air taxi transportation, but these researchers have not successfully identified how this might occur, because the government has indicated that there will not be resources to conduct a massive educational campaign (National Research Council, 2002; Wensveen, 2018). A change in travel methodology represents a fundamental shift in the social fabric of a society (Kezar, 2011; Stathopoulos et al., 2017). This gap and underlying problem deserve investigation because better means of transportation in the United States utilizing an existing infrastructure have historically received widespread, relatively rapid acceptance (Chan, Niesner, & Vuong, 2009; Stathopoulos et al., 2017). This paradigm has not held true with the air taxi with business travelers and researchers have strongly suggested that this problem merits further academic exploration (Baik et al., 2008; Kaps et al., 2001; Saurin & Carim Junior, 2012).

Purpose of the Study

The purpose of this qualitative case study was to explore the dissemination of air travel choices expressed via interviews by business travelers using ImagineAir air taxi service in the United States based upon the Rogers diffusion of innovation. The study produced qualitative results that may help facilitate the acceleration of air taxi travel

adoption and enable future quantitative studies based upon its findings. Employing this framework, the researcher uncovered factors accelerating air taxi innovation diffusion via semistructured interviews dictated by the Rogers diffusion of innovations framework with business travelers addressing the question of "how this choice is implemented and with what consequences" (Rogers, 2003, p. 440).

The research was conducted using an interpretive paradigm; this allowed me to capture the business traveler's perception about ImagineAir air taxi as an innovation that was successfully communicated via channels over time in their social system (Rogers, 2003; Taneja, 2016b). This enabled the analysis of informational distribution factors that could affect consumer behavior and accelerate social change in air travel (Muskat, Blackman, & Muskat, 2012).

Research Questions

Research questions frame the objective of the study (Maxwell, 2012). They were used to investigate the perceptions, attitudes, and intended use of air taxi travel by ImagineAir business travelers. The study population consisted of active business frequent flyers who have traveled on ImagineAir air taxi at least once. The researcher used the following research questions to address an inquiry bounded by Rogers's diffusion of innovations theory: (a) How was the ImagineAir air taxi innovation communicated via channels over time in the social system? (b) What are the business travelers' perceptions of relative advantages, compatibility, observability, trialability, risk, and complexity of the ImagineAir air taxi innovation? (c) Which communications channels enabled business travelers to first learn about ImagineAir air taxi? (d) What timeframe and events led from first knowledge of ImagineAir to first booking, second booking, and beyond? (e) What

self-described Rogers adopter type do the ImagineAir business travelers perceive themselves to be? (f) What business workplace environment enabled the business travelers to try ImagineAir? With this investigative approach forming the bounds of the study, the researcher used a semistructured interview process questions to solicit direct answers.

Conceptual Framework of the Study

This qualitative case study used the Rogers (2003) diffusion of innovations framework as the conceptual framework. Over the decades and across disciplines, this framework has proven to be the most robust for capturing discordant data points in a case study using semistructured interviews (Sahin, 2006). The researcher presents relevant examples in the literature review in Chapter 2. Qualitative research of this nature using Rogers as the conceptual framework served as the most appropriate methodology for three reasons. (a) The ImagineAir air taxi analysis based upon the Rogers diffusion of innovations theory provides a unique case study situation with many variables of interest. (b) The nature of the study relies upon the triangulation of data from both interviews and database points in a new research area. (c) This qualitative approach allows for the development of theoretical propositions prior to a topic being studied quantitatively (Yin, 2014). In this scenario, qualitative "case study research comprises an all-encompassing method—covering the logic of design, data collection techniques, and specific approaches to data analysis" (Yin, 2014, p. 17). The posed a series of semistructured questions to help determine participants' perceptions about the relative advantages, compatibility, observability, trialability, risk, and complexity of the ImagineAir air taxi product. The researcher then asked which communications channel initially alerted them

to the concept of ImagineAir air taxi, the timeframe for key decision points in selecting their flight methodology, their self-perceived adopter disposition, and influence from their workplace social system. Analysis of these variables within the Rogers (2003) framework helped to determine the factors influencing business traveler purchases (Shorter-Judson, 2000).

Nature of the Study

The researcher uses a qualitative case study design to best examine the questions at hand, examine the collected data, conduct the proper analysis, and yield an academic interpretation (Elo et al., 2014). Initially, the researcher launched this dissertation as a quantitative study, incorporating hypotheses as the basis for the problem statement. After numerous revisions, the researcher and his advisors determined that the research needed to be a qualitative study dissertation. From these attempts, the research approach changed so that a qualitative research study could create a foundation for future quantitative studies. With this approach, the theoretical propositions placed into the initial design formed the groundwork for future research work by advancing theoretical concepts (Yin, 2014). Qualitative case studies work best in an environment of multiple types of data. In this instance, semistructured interviews and a database with relevant information about the interviewees were used as data sources.

The case study approach proved more meritorious than the other four qualitative research traditions. An ethnography approach did not work properly with the Rogers theory because with air taxis there could not be a live observation of a society at work. The qualitative grounded theory approach did not warrant contemplation because the air taxi diffusion of innovations understanding does not work as a theoretical narrative form.

The biography qualitative research approach did not merit consideration because capturing the diffusion of innovation involves more than one individual. Phenomenology did not merit serious consideration as a research approach because capturing the essence of an experience on air taxi could not reach the level of depth to understand the diffusion of the innovation (Seidman, 2012).

Because the study remained a qualitative case study, the researcher used a combination of semistructured interviews with relevant database information about the timeline of the ImagineAir air taxi adoption. This met the objective of determining how the ImagineAir air taxi innovation successfully communicated via channels over time in the social system (Stacks & Salwen, 2014). Data collection occurred via semistructured interviews from business travelers on ImagineAir who had traveled on at least one air taxi flight. Additional data derived from ImagineAir's customer database with actual flight data provided a backdrop for the timeline of innovation adoption as previously outlined. In this qualitative case study analysis, pattern matching served as one of the most desirable techniques (Trochim, 1989). The current researcher used pattern matching to demonstrate alignment of the patterns to the Rogers (2003) diffusion of innovations theory.

Definition of Terms

To understand the landscape of this research, readers must familiarize themselves with two sets of research terms. The first set includes aviation terms relevant to the next-generation air taxi phenomenon. The second set of definitions encompasses key terms related to Rogers's (2003) diffusion of innovation and change philosophy.

Aviation Terms

*Air charter or air taxi***.** This term describes a "small aircraft [that] provide[s] passengers with near-on-demand transportation from an airport nearest the passenger's travel point of origin to an airport nearest the passenger's travel point of destination" (Mane & Crossley, 2009, p. 1222) . Under FAA terminology referring to on-demand air services, the terms *air charter* or *air taxi* may be used interchangeably (Checchio, 2011; McGee, 2015). In the United States, an air taxi or air charter operator may legally only offer the entire aircraft and does not sell individual seats to different passengers. The FAA has dictated that these aircraft cannot typically fly on a set schedule between set points as that would violate their charter as on-demand air taxi aircraft. The price premium for this service traditionally has been high. Historically, business travelers and the affluent have more frequently used air taxi services. The advancement of these air taxi/air charter aircraft has more recently included technically advanced aircraft (TAA). These TAA air taxi/air charter aircraft offer the capability to provide direct, regional flights for one or more passengers at a price point for the total number of seats closer to full-fare commercial air travel on-board a next-generation aircraft (Butterworth-Hayes, 2006).

Commercial airlines. This term includes air transportation companies that provide a scheduled, systematic transport of passengers (O'Connor, 2001). Commercial airlines universally refer to major airlines, low-cost carriers, and their regional airlines that operate traditional scheduled passenger service. Terms that may be interchangeably used for commercial airlines include airlines and commercial carriers (O'Connor, 2001).

Low-cost carriers (LCCs). Newer, low-cost airlines have arisen or blossomed after deregulation occurred at the end of the 1970s (*Airline mergers and their effect on american consumers*, 2001). These carriers primarily serve point-to-point markets at a lower cost basis than major carriers. These lower price points have historically been disruptive to the business models of major carriers (Forsyth, 2005). Examples of American low-cost carriers include JetBlue, Southwest Airlines, and Virgin America (Mumbower, Garrow, & Higgins, 2014). The primary focus of these low-cost carriers is to provide a point-to-point service both to major and secondary markets at a lower cost to increase market demand for air travel (de Neufville, 2005).

Major airlines or *major carriers***.** This term refers to traditional commercial passenger airlines that provide a hub and spoke system of passenger travel to major metropolitan destinations. The terms are interchangeable (Goetz & Sutton, 2017; O'Connor, 2001).

Major markets. These include the top large hubs 29 metropolitan areas of the United States that account for over 71% of all commercial airline passenger enplanements inclusive of all major airlines and low-cost carriers in the country and serve as hubs for the airlines (Foxx, 2014).

On-demand. All air charter and air taxi aircraft are “on demand,” providing service as needed by utilizing the entire aircraft for one customer or company (Butterworth-Hayes, 2006; Redelinghuys, 2013).

On-demand, per seat. Per-seat on-demand means that the on-demand aircraft operates as a shared ride air taxi sold in advance. Governed by the FAA, federal law forbids on-demand air charter and air taxi operators from selling individual seats in the

United States. Yet, creative air charter and air taxi operators have legally sold passengers seats by consolidating demand before the on-demand flight is booked. For example, passengers that desire to travel from West Palm Beach to New York on a private plane could put in their flight request. Those flight requests are consolidated and an on-demand flight is arranged (Butterworth-Hayes, 2006; Redelinghuys, 2013).

Regional airlines. All major carriers and some low-cost carriers have regional airlines or feeder airlines that operate smaller aircraft regionally to secondary markets in order to feed into the major airline hubs (Friedman, 2000; Tan, 2016).

Secondary markets. These secondary markets include nearly 500 commercial airports in the United States that have scheduled commercial airline service provided by at least one major carrier, low-cost carrier, or one of their feeder airlines (de Neufville, 2005; USDOT, 2018). According to the 2010 census, only 63% of Americans live within 20 miles of an airport offering any commercial airline flights including secondary markets (LaHood, 2012). These secondary airports only account for approximately 10% of all commercial flights operated in the United States. The disadvantages for passengers traveling from one of these secondary markets include few non-stop flight options. Most airplane flights from these secondary markets require a connection through one of the 29 major markets in the United States. The use of a hub and spoke system increases total flight time and decreases the efficiency of air travel for individuals coming from and going to secondary markets (Cidell, 2014).

U.S. private aviation marketplace. The United States represents the largest operating base of small, air taxi aircraft in the world, with small piston and turbo-prop aircraft currently flying over 2.5 million hours annually (Bhadra & Schaufele, 2007).

Calculating these flights at an average rate of $1,500 per trip, the total revenue in the United States for air taxis would be $3.8 billion dollars (Butterworth-Hayes, 2006).

Diffusion of innovations and Change Terms

Since the current researcher used Rogers's (2003) diffusion of innovation as the foundation for this study, core definitions from his theory must be clearly defined. While there exists an academic tradition to alphabetize terms, the researcher will present these terms in a manner where the most important definitions are placed first to properly frame later terms. In addition, some terms below are in the order identified by Rogers to align with previous research work.

Communication. In the Rogers theory, communication refers to "a process in which participants create and share information with one another in order to reach a mutual understanding" (Rogers, 2003, p. 35). A communication channel refers to messages between individuals. There are two types of communication channels: (a) mass media channels and (b) interpersonal channels. The mass media channels work effectively in imparting knowledge about an innovation. In contrast, interpersonal channels are more successful in changing attitudes towards the innovation idea put forward. This ability to shift attitudes provides a much more effective conduit influencing an individual's decision to either adopt or reject the innovation. Individuals typically rely upon the subjective input of their peers to evaluate an innovation. These peers are effectively the role models to potential adopters. These role models of innovation have their behavior frequently imitated by others (Rogers, 2003, p. 36)).

Diffusion. This term describes "the process by which an innovation is communicated through certain channels over time among the members of a social

system. Diffusion is a special type of communication concerned with the spread of messages that are perceived as new ideas" (Rogers, 2003, p. 35). According to Rogers, there are four key elements contained in the diffusion of new ideas: "(a) an *innovation* (b) that is *communicated* through certain channels (c) *over time* (d) among the members of a *social system*" (Rogers, 2003, p. 36).

Heterophily. This term means love of those who are different from oneself. Heterophily illustrates how two or more different individuals interact in effectively spreading the innovation (Rogers, 2003, pp. 36-37).

Homophily. Homophily denotes love of those who are the same as oneself. This is the opposite of heterophily. While homophily is normal in society, there is a need for heterophily in the diffusion of innovations between groups (Rogers, 2003, pp. 36-37).

Information. This term refers to knowledge passed along about an innovation and alternatives as a central factor that affects adoption of an innovation (Rogers, 2003).

Innovation. This refers to an "idea, practice, or object perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 36). Technology is frequently a key component in innovations. The technology within innovation has two components: (a) hardware technology serves as physical object technology in a material form, and (b) software technology holds the knowledge base for the use of the tool (Rogers, 2003, p. 36).

Innovativeness. This term indicates the speed of innovation adoption; it may more precisely be defined as "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system" (Rogers, 2003, p. 475). The five categories of innovativeness include the following labels

based on the speed of individual adoption: innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003, p. 37).

Opinion leadership. This represents the extent that individuals may influence the attitudes and behavior of others in society. Opinion leadership serves to lead a wave of belief towards an innovation, but an opinion leader may take an additional step by acting directly as a change agent. A change agent attempts to influence the decision of others in a specific direction either for or against the innovation (Rogers, 2003, pp. 37-38).

Rate of adoption. The rate of adoption is determined by how the characteristics of an innovation as perceived through five distinct product attributes of innovation: "(a) relative advantage, (b) compatibility, (c) complexity, (d) trialability, and (e) observability" (Rogers, 2003, p. 36).

Relative advantage. "[T]he degree to which an innovation is perceived as better than the idea it supersedes" (Rogers, 2003, p. 15).

Compatibility. "[T]he degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 2003, p. 15).

Complexity. "[T]he degree to which an innovation is perceived as difficult to understand and use" (Rogers, 2003, p. 16).

Trialability. "[T]he degree to which an innovation may be experimented with or tested on a limited basis" (Rogers, 2003, p. 16).

***Observability*.** "[T]he degree to which the results of an innovation are visible to others" (Rogers, 2003, p. 16). Rogers used this term interchangeably with the term

communicability because observability frequently requires communication for the unobservable (Amaro & Duarte, 2015).

Social system. One's social system serves as an interrelated social structure working to achieve a common objective. The social system exists to provide an infrastructure so that there is regularity and stability to the behavior of individuals. Effectively, these societal norms represent the established pattern of individual behavior. The social nature and communication methodology within this social system may either facilitate or inhibit the diffusion of an innovation. Depending on how far the innovation resonates, there may be specific consequences that ripple across society because of a major innovation (Rogers, 2003, pp. 37-38). For example, Rogers illustrates that the internet has been the fastest spreading technological innovation ever recorded in human history. According to Rogers (2003), the interactive communications provided by the internet could forever shift the speed of future diffusion of innovations processes and further break down information barriers.

Timeline of diffusion. Acts to measure the diffusion of innovations over a time horizon. There are five steps in the timeline that act as measurable checkpoints in the diffusion of an innovation: "(a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation" (Rogers, 2003, p. 37). First, a new idea first enlightens an individual with a first impression. With persuasion, individuals examine the innovation more to overcome their uncertainty of the consequences of adopting an innovation. After weighing the benefits against the detriments, everyone reaches a point of decision. Each person elects either to adopt an innovation embracing the new idea to a certain point of use or to reject the innovation (Rogers, 2003, p. 37).

Uncertainty. This embodies in the Rogers theory the perceived risk in an innovation relative to alternatives (Rogers, 2003).

Assumptions

The current researcher based the research approach upon key assumptions necessary to the study. First, the researcher assumed that the participants in the study would offer truthful and candid answers. The second assumption was that the data collected from both the individuals in the semistructured interviews along with the data from Imagine Air's customer database, would be valid and comprehensive.

ImagineAir volunteered to provide key customer information for this research. The only benefit that ImagineAir received from this action was a more thorough analysis of their customers, with the full knowledge that nonidentifiable and aggregate data would become public in this research product. In the context of this study, this partnership with an air taxi company proved necessary to gain a sufficient sample size of participants who had experienced air taxi travel. These assumptions contributed to the overall credibility of this study.

Scope and Delimitations

The scope of this dissertation limited the research data collection to telephone interviews and customer database information correlated against those interviews. There were two major delimitations in this study. First, the United States served as the geographic boundary delimitation. The results of this research may not be generalizable outside of the United States without a similar, multifaceted study. Second, only one group of air travelers functioned as the focal point of this study. This group consisted of air travelers that had previously used ImagineAir. While this group was ideal, the grouping

did not reflect the broader population base in the United States. These delimitations may have constrained the research away from individuals who may currently use their car on drives of four to eight hours but have never considered air taxi as a viable option. With this scope and delimitations stated, the research approach used in this study allowed the researcher to uncover general patterns in the overarching diffusion of the air taxi innovation.

Limitations

This study was subject to five limitations or weaknesses.

The limitations of this study included the use of the qualitative case study as the research design and the understandable constraints of semistructured interviews as the primary research method of collecting data.

While the ImagineAir database was used for sampling, the sample might have produced bias because of the relatively small number of participants; this was complicated by the fact that the interviews were voluntary (Reis, Gable, & Maniaci, 2014). Typically, air taxi business travelers are high net-worth individuals with a very high value associated with their time (Wensveen, 2018). This may have limited the amount of time that participants were willing to participate in the research study without shortening their answers for efficiency.

Additionally, there was a limitation of the study in terms of the amount of existing knowledge the participants had about the air taxi.

The outcome of this study also faced limits from the response range accomplished via 35 participants and the similarities of the responses amongst the participants for word choice analysis (Yin, 2014). Reasonable measures were taken to minimize the effect of

these limitations by utilizing specified samples with unfettered access to the ImagineAir database, financial compensation to participants from ImagineAir in the form of a $200 credit for their time, and the disqualification of participants that did not fully answer the question set. Despite these research design limitations and their required countermeasures, the qualitative case study approach remained "the best plan for answering the research questions; its strengths outweigh its limitations" (Merriam, 2009).

Finally, the researcher freely admits that he is biased towards the air taxi innovation based on my prior work in the industry. To compensate for this bias and for any natural bias from the researcher's history in the air taxi industry, the researcher took a neopositivist approach demanding a more rigorous scientific approach to the interviews, which better enabled the researcher to act as a conduit for the research (Qu & Dumay, 2011). This limitation is discussed in Chapter 3.

Significance of the Study

In this section, the researcher contributes to knowledge generation, professional application, and positive social change in air travel.

The researcher aimed to extend Rogers's diffusion of innovations theory to air taxi. By design, this qualitative case study research applied specifically to customers of ImagineAir air taxi. The knowledge discovered may not be directly transferable to other air taxi operations, but the exploration may add to the foundational research required to allow for future qualitative and quantitative research. This knowledge may form a greater base of understanding for others to facilitate change in the airline industry, which has a critical role in the air taxi model. Traditionally, regional business travel across America has been limited to cars, trains, and commercial aviation. The air taxi phenomenon cannot

be embraced with a “build it and they will come” philosophy, because this approach has led to failure in the past. Examples of such failures include the air taxi company DayJet closing only 1 year after launching per-seat, on-demand service (Lei & Slocum Jr, 2009). After 5 years of carefully structured growth, SATSAir shut down in October 2009 after successfully growing their fleet to 26 Circus SR-22 aircraft, similar to those used by ImagineAir (Mane & Crossley, 2009; M. D. Moore et al., 2013; Tan, 2016).

The application of the research may benefit aviation in the United States with a better understanding of both business travelers and the overarching marketplace. In turn, this may accelerate positive social change by providing existing information in a significantly different manner. In addition, this study benefits the rest of the aviation industry by helping others to comprehend changing travel preferences. Companies that do not understand change often fall victim to the revolution that it entails (Beck & Cowan, 2014; Henderson, 2006). In contrast, companies that have been able to embrace change may thrive despite the shift. Waves of low-cost carriers over the past decade have been toxic to the ways of legacy airlines. Business travelers flying between most major markets would no longer have to worry about Saturday night stays or other legacy restrictions (Borenstein & Rose, 2014; Whitelegg, 2005). These legacy airlines still enjoy a disproportional amount of their business from high-end clientele paying price premiums for last-minute, first class, or business class travel (Cook & Billig, 2017; Neal & Kassens-Noor, 2011). Another customer base providing high-revenue flights to legacy airlines originate or end their flights in secondary cities without discount carriers (Nawal K. Taneja, 2004; Taneja, 2016b; USDOT, 2018; Wieneke, 2014). These cities also lack frequent commercial air service (Metrass-Mendes & de Neufville, 2010; USDOT, 2018).

Customers paying high-end fares to legacy airlines could instead enjoy air taxi service *on their schedule* at comparable prices. The same revenue-draining effects that legacy airlines felt from low-cost carriers could shift their most lucrative remaining passengers to air taxi flights (Checchio, 2011; Wensveen, 2018). The applications of this research therefore provide a commercial opportunity to embrace change in a manner that benefits business (Fallows, 2008; Lee, Wang, & Leong, 2017).

Finally, this research may provide other opportunities for positive social change encompassing businesses, passengers, and families. With air taxi travel options, a democratization occurs in air travel, allowing people and companies in rural areas to enjoy more convenient flight schedules as do their metropolitan counterparts (DeLaurentis & Peeta, 2011; Taneja, 2016a). Businesses may more efficiently use employee time with customers, turning longer trips into shorter, more efficient ones. With more efficient air travel, a new possibility appears for business travelers: spending fewer nights on the road as an on-demand schedule enables greater potential for day trips. This could reduce the total business expense for overnight travel and allow business travelers to spend more time at home(Baik et al., 2008; Stimpson et al., 2017).

Summary

Researchers have predicted that air taxi travel will become a significantly greater part of the American air transportation infrastructure in coming years. Underutilized aircraft and airports exist across the nation already (Fallows, 2008; Stimpson et al., 2017). The acceleration of this air travel innovation first requires an understanding of the traveling customer. Using Rogers's (2003) diffusion of innovations methodology, a qualitative case study analysis of these business travelers on ImagineAir may uncover the

potential for the acceleration of air taxi adoption. Otherwise, companies may spend vast additional funds on air travel innovations that may or may not be accepted. The emerging air taxi industry has already seen collateral damage from companies funded with a mentality of building a service and expecting customers to embrace it readily (Lei & Slocum Jr, 2009; Taneja, 2016a).

In the following chapter, the researcher will describe the theoretical foundation, validate the Rogers (2003) approach, and demonstrate the applications of the theory for this travel innovation.

Chapter 2: Literature Review

Introduction

As stated in Chapter 1, the current researcher aimed to understand how to accelerate a change in air taxi use by understanding the diffusion of innovations process within the ImagineAir air taxi customers. The literature review of the Rogers (2003) diffusion of innovations model forms a necessary structural backdrop. This review begins with the researcher encompassing the breadth of relevant work from Rogers's diffusion of innovations theory. Building on that foundation, further investigational inquiry will illuminate relevant studies on air travel behavior. To compile this literature review, the researcher undertook a multifaceted electronic search which encompassed technical literature, peer-reviewed academic journals, trade publications, government statistics, and other relevant secondary sources.

Literature Review Strategy

Embarking on the literature review required the researcher to familiarize himself with the literature that pertained to a both the problem statement and the objectives of the study. An in-depth review of the available research illustrates the application of methodology used with business air travelers. The author used the backdrop to expound upon literature related to the qualitative methodology of the research. In addition, the researcher will introduce relevant literature from the air taxi sector to further exemplify the research approach taken for this study.

The literature review focused on two areas: (a) research on air travel and especially air taxi travel, and (b) the application of Rogers's diffusion of innovations theory. All searches focused on books and recently published journals of a scholarly

nature. Occasional overlap occurred between the two areas of Rogers's diffusion of innovations theory and aviation. The diffusion of innovations theory included not only overarching research on the application of the theory, but also specific application on travel-based diffusion. Keywords used in this search included *Everett Rogers, diffusion, innovation, transportation, air travel, airplane, aviation, air taxi, charter, private planes, private air, technologically advanced aircraft, SATS, VLJs, very light jets,* and *single engine jets*. Databases used in the search for scholarly articles included all available databases in ProQuest, EBSCO, Google Scholar, Library of Congress, SAGE, and Science Direct. The primary search focused on the most recent and relevant scholarly articles, but for air taxi related articles, relevance overrode recentness. In addition, with Rogers serving as the focal point for diffusion of innovations theory, a concerted effort focused on utilizing his final published works before his death in 2004. In the search, the current researcher discovered very little information specifically about air taxis and the diffusion of innovations theory. The most relevant pieces on transportation and diffusion of innovations theory together formed the relevant backdrop for the study.

Literature Background on Diffusion Theory

The genesis of the diffusion of innovations began in the 1950s and blossomed into the widely-accepted diffusion theory that illuminates a stream of ideas and products. The development of the literature occurred across a variety of disciplines. In 1953, Barnett introduced the theory of innovation as the basis for cultural change in an anthropological nature (Singleton & Straits, 2010). Parallel diffusion innovation research followed shortly thereafter with studies upon on agricultural diffusion on hybrid corn (Phillips, 2016;

Ryan & Gross, 1943) and in medical sociology (Cottrill, Rogers, & Mills, 1989; Zimmerman, Xiao, Mehrotra, & Roy, 2016).

In 1961, scholars demonstrated the importance of diffusion of innovations theory in industrial applications (George, McGahan, & Prabhu, 2012). The following year, diffusion of innovations researchers demonstrated the importance of social systems in rural sociology. This introduction to social systems also refined an important notion: the diffusion of innovations theory worked as a broad-based methodology applicable across a wealth of disciplines (Kapoor, Dwivedi, & Williams, 2014). From this point, the social nature of the diffusion of innovations made the theory ripe for marketing theory. This concept first found an audience in 1963 at the American Marketing Association conference (King, 1963). The marketing theory of the diffusion of innovations advanced the following year in marketing focused upon food preferences and dental services. In the remainder of the decade, social scientists progressed the theory across different manners of product centric marketing (George et al., 2012). The body of work from the 1960s culminated into a widely accepted system dynamics model that gained traction in marketing across both products and durables (Bass, 1969; Kapoor et al., 2014). In the 1960s, the culmination of researcher efforts led to a remarkable gain for diffusion of innovations theory in three key areas. First, the parameters for a basic diffusion model now included the notion of a saturation effect. Second, the formulation of the relationship between innovators and imitators in the diffusion of innovations theory now occurred over a time horizon. Finally, scholars created applicable models for estimation parameters. This includes the ability to more properly forecast via available data and create further estimates via ordinary least squares (Rogers, 2003).

In the 1970s, diffusion modeling advanced further with academic researchers creating several extensions and refinement procedures. These included dynamic diffusion models, market saturation variations, multiple innovation diffusion paths, space/time diffusion theory, and multistage diffusion models where adopters go through a variety of stages during the acceptance of the innovation (Meade & Islam, 2006). From the 1980s forward, diffusion of innovations scientists achieved an overwhelming number of additional advances. These include the unbundling of adopters, new diffusion estimation methodologies without prior data, new diffusion estimations with data available, systematic variation for diffusion parameters, and flexible diffusion patterns. These theorists advanced a wealth of new models including multigenerational diffusion models, multistage diffusion models, marketing mix diffusion models, attribute-based diffusion models, controlled diffusion models, multiadoption diffusion model, and competitive diffusion models. The use of these models encompassed additional enhancements in forecasting methodology, descriptive hypothesis testing across geographic boundaries, and normative derivation of the optimal price/promotion rating in a given market time horizon (Mahajan, Muller, & Bass, 1990).

Forecasting Success via Models of Innovation

In a study published in *Research Evaluation* on Rogers's (2003) diffusion of innovations methodology, researchers warned that few innovative services and products enjoy wide consumer diffusion (Frenzel & Grupp, 2009, p. 39). As Rogers stated, the complexity of an innovation holds an inverse relationship to successful diffusion potential. The approach used by the social scientists required making the wealth of Rogers related diffusion models more appropriate for application. The scholars indicate

that three steps provide the path to place the proper diffusion methodology with the correct market application. First, academic researchers must use qualitative research on the target market for the innovation against a backdrop of possible diffusion (Frenzel & Grupp, 2009). Using Rogers's definition of diffusion of innovations, the researchers used a four-dimensional diffusion of innovations framework that included communication channels, innovation, time, and social systems. The patterns taken during a diffusion of innovations may vary dramatically (Frenzel & Grupp, 2009).

An academic researcher must take seven steps analyzing the characteristics of an innovation to begin the investigation into the subject matter. First, a researcher must determine the locus of the innovation. This begins by determining if the diffusion of the innovation occurs on the demand side or on the supply side (Frenzel & Grupp, 2009). For example, American Airlines accelerated innovation on the supply side in the 1960s by offering new non-stop jet service on new types of aircraft. American Airlines more assertively sold that service at a higher price premium (Geels, 2006). In contrast, Southwest Airlines unleashed a transformative demand side innovation in the 1970s as individuals experienced flight for less than the cost of a comparable automobile trip (Williams, 2017).

The second point of characterization for the diffusion of an innovation rests in the economics of the innovation itself. Several facets merit examination to determine the core economics of the innovation. First, one must determine when the innovation first became available. Second, the changing nature of the core innovation must be determined as either relatively static in nature or undergoing a process of continuous technical improvements. Finally, supply and demand side conditions that affect prices demand

exposition. These economic and developmental factors may trigger accelerated adoption of the innovation. Inversely, they may dramatically slow the adoption (Frenzel & Grupp, 2009). As related to air taxi flights, an increase of demand from traveling passengers triggers a decrease in price because of more efficient operation of the aircraft (Cistone, 2004). The air taxi innovation more closely follows the economic model. Greater use of aircraft allows lower costs for everyone (Droß & de Jong, 2007).

A third characterization for the successful diffusion of innovations requires prolific communication and information diffusion. A researcher must determine how well the intended audience understands the existence and attributes of the innovation. For example, prolific smart phones like the iPhone benefit from tremendous publicity and explanation. In contrast, wireless electrical charging devices represent a more esoteric concept that does not have a tremendous amount of momentum in accelerating adoption. In the realm of information, there also exists a focus on perfect versus imperfect information. More perfect information often leads to an acceleration of adoption whereas less perfect information may leave people not fully understanding the benefits of the innovation (Frenzel & Grupp, 2009). In applying this characterization to air taxi travel, researchers have indicated a minimal understanding thus far of the existence and attributes of the innovation. While air travelers typically know of the existence of a local airport for private flights, they do not know how to book private flights from that airport (Checchio, 2011; Kaps et al., 2001).

The fourth characterization in innovation diffusion revolves around the time dynamics of the innovation. To determine this aspect, a researcher must determine if the returns of the diffusion of innovations are constant, dynamic, or diminishing. An

excellent example of this occurred with mobile phone. A snowball effect occurred as more users led to lower costs and greater reachability. The time dynamic also intertwines with the path dependencies and learning histories of individuals. If there is uncertainty surrounding an innovation and the success of its adoption, then less likelihood exists for an accelerated adoption with a snowball effect (Frenzel & Grupp, 2009). As an example, the Betamax versus VHS competition slowed the adoption of video tape recorders. In contrast, the resolute standard of DVD accelerated one of the fastest technological adoptions in video history around a common standard (Greenstein & Prince, 2006).

The fifth element in innovation diffusion arrives from the social systems used by the targets for the innovation. First, the method in which people connect to the innovation merits careful consideration from a social perspective. The social systems used by the target audience illustrate the potential for the innovation to spread either slowly or rapidly. The target adopter population ties tightly into this social system element. This should trigger a researcher to determine if there are uniform preferences across a relatively heterogeneous population. That means that the target population could have similar motivations to adopt the innovation. In contrast, a researcher may need to establish if the target population for the innovation has significant differences in their reason for acquiring the innovation (Frenzel & Grupp, 2009). For air taxis, this has proven to be one of the weakest links, because even travel professionals and their networks of peers do not consider themselves experts in this arena. In validation of this fact, a journal study indicated that only three in 100 travel agents have experience in booking air taxi or air charter travel (Kaps et al., 2001).

The sixth element in the diffusion of innovations revolves around the choices made and behaviors emulated by individual adopters: a determination if the individual behaviors stand as rational or irrational in nature. Economic rationalization shows where individual choices are rational against a set payoff; it also illustrates when individuals are simply optimizing against the backdrop of other sociological behavior. This provides a key opportunity to analyze how much of the decision making process stems from analytical analysis versus social persuasion (Frenzel & Grupp, 2009). From an air taxi perspective, this element in the diffusion of innovations stands as a weak link. DayJet serves as an ideal example of an air taxi company suffering from irrational behavior of potential air taxi adopters. DayJet existed as a strongly financed air taxi company launched in the southeastern United States in 2007 with over 1,000 jets on order. DayJet envisioned travelers calculating the value of their time to take an air taxi aircraft rather than an automobile. Studies by research organizations in coordination with NASA had proven this time-value of travel theory (Baik et al., 2008; Stimpson et al., 2017). In contrast to the studies, potential air travelers appeared to be more resolute in following traditional habits rather than looking for a new methodology of air transportation to replace driving long distances across the state. The air taxi company folded after less than 1 year of operations. In addition, an overly complicated booking process cited by customers appeared as a primary cause of failure for the fledgling air taxi company (Lei & Slocum Jr, 2009).

Finally, the seventh element of analysis in determining the diffusion of innovations methodology derives from the driving force of diffusion. Are the forces exogenous or endogenous in nature? That question triggers researchers to ask if the

diffusion process comes from external, macro-economic factors. In contrast, a researcher must also ask the inverse: does the diffusion process arrive from internally driven change factors of innovation such as creation, innovation, and networking effects. Boundaries must be set so that the diffusion of innovations does not entirely arise endogenously in case analysis. Otherwise, innovators may fall into a trap of believing that the creation of innovation alone may trigger demand (Frenzel & Grupp, 2009). From an air taxi innovation perspective, the driving force is endogenous in nature from individuals seeking an innovative way to travel. In addition, the driving force of potential diffusion stems from externalities including potential ease of booking air taxi travel (Anthony, 2008).

Against the backdrop of the seven elements of diffusion innovation, the ability emerges to categorize diffusion models more clearly. The first empirical studies of diffusion revolved around how innovation successfully diffuses. Originally, a two-step econometrically produced procedure ushered in the widely-accepted diffusion of innovations methodology. Those original studies illustrated the diffusion of hybrid corn (Croft, 2009) and the diffusion of specific manufacturing innovations (Groves & Couper, 1998). The common econometric procedure collected by the authors took two specific steps. First, the researchers collected and processed data of two or more diffusion of innovations paths. Using innovation paths, the researchers studied an identical innovation used in different applications or different innovations used in the same application. A logistic function then applied to the data revealed an S-shaped diffusion of innovations model. This S-shaped model, also called the logit model, indicates that diffusion paths

follow a linear regression or curve-fitting analysis that identifies the speed of diffusion (Frenzel & Grupp, 2009).

Beyond this approach, diffusion theory researchers place belief in theory-focused models interchangeably called rank effect models or probit models (Frenzel & Grupp, 2009). The premise of these models arrives from the fact that some adopters will enjoy a higher return on investment from technology than others (Aldridge & Levine, 2001). Accordingly, scholars may rank these adopters based on their expected level of return. Those adopters with a higher ranking of their expected level of return are more likely to adopt an innovation more quickly. As the innovation spreads, others with lower ranking will accept the innovation as the cost decreases. These models require assumptions of rationality with a myopic focus. The myopic focus assumes that individual adopters will hit a trigger level of utility that will engender their adoption of an innovation. "The exogenously given model parameter price, adopter preferences, and technology quality are myopically processed by the adopters, keeping the model in equilibrium at all times" (Frenzel & Grupp, 2009, p. 44).

Order models or game theory models represent another means of understanding the complex interaction of supply and demand in a timeline approach (Groves, 2004). These models are applicable only when there exists a critical junction in the adoption of the innovation (Frenzel & Grupp, 2009). Following game theory like patterns, the order of adoption becomes a critical path where only first movers who want to secure critical competitive advantages will aggressively adopt the new technology. Tightly related to the order model is the stock model. The stock model builds on the notion that early adopters receive a higher return on investment from the innovation. This phenomenon occurs

because early adopters adopt a cost-savings methodology triggering lower overall costs. As more adopters adopt the same technology, the early adopter loses their initial cost advantage while there are diminishing returns for the later adopters (Groves, 2004).

A different set of innovation diffusion models emerged centered around communications and information diffusion. These models, called *epidemic models* or *systems dynamic models*, seek to answer a question from the dawn of diffusion theory. Armed with these models, researchers seek to understand why some individuals adopt new technology much more slowly than others do. An initial answer to this question emerged: most individuals initially receive the information later than others do before deciding to act upon the data. Information travels very differently via word-of-moth versus internal communications. This differentiation accounted for the difference between homogeneous and heterogeneous communication. An epidemic diffusion model assumes that individuals do not know about an innovation but will more readily adopt the innovation when they receive the information. Of course, not all innovations are epidemic in nature, requiring a marketing-mix to infect potential adopters with both information and influence (Bass, 1969).

In contrast, individual-level models exist that demonstrate a probability rate of adoption. These individual-level models encompass specific hazards and vary dramatically. Hazard-rate models like these assume that potential adopters come from a heterogeneous environment, but the potential adopters have individual expectations. These potential adopters balance the information received in a rational manner. They then adopt the innovation if the rational benefit exceeds the aversion to risk (Byrne, 2011).

Time stands as an additional dimension in diffusion of innovations theory. The time paradigm of diffusion initially came into being with informational cascade and path-dependency models. In these models, individuals select innovation based on expectations on their performance over time. On occasion, two or more varieties of a similar innovation appear concurrently. If two or more competing similar innovations emerge at the same time, then an informational contest occurs in a path-dependency model. The gravity of information dissemination will shift adopters to the innovation preferred by the majority of early adopters. With two similar innovations, a time-to-market advantage by one of the innovations may or may not shift the balance in favor of the technology that emerges first. If the first-to-market innovation works sufficiently well, then the innovation may triumph, despite minor advantages of a similar innovation that arrives to market slightly later. The first innovation wins via a preponderance of momentum and market certainty because of a bandwagon effect. Yet if there are significant deficiencies in the first-to-market technology, then an innovation that addresses those deficiencies may become the victor. This occurs in a manner that provides market certainty via the bandwagon effect of imitation. This model of innovation garners a title that reflects how imperfect information diffuses among homogeneous adopter: the information cascade model. While consumers of the innovation may be initially rational, over time they become irrational as they lock into a technology via a homogenously driven bandwagon effect with the informational cascade (Nilakanta & Scamell, 1990).

Another model called the increasing returns model builds further upon the path dependency model. The increasing returns model focuses upon increasing returns by highlighting that demand for an innovation can gain inertia. This increasing return

diffusion model emphasizes two externalities affecting an individual's adoption decision. First, a stranding effect occurs upon the existing base of customers that have adopted the innovation. Second, a causality effect befalls later adopters of the innovation. Those utilizing an existing innovation have a natural bias against other competing innovations (Mitchell & Jolley, 2013). While this causes macroeconomic inefficiencies, overarching efficiency gains occurs via inertia with the wide acceptance of an innovation. This increasing returns model assumes that individuals make rational choices based on endogenous network externalities and a homogeneous pool of adopters (Frenzel & Grupp, 2009).

The social system of innovation adopters illustrates yet another possibility: two distinctly different homogeneous groups selecting different innovations based on the same technology. This density-dependent model of innovation diffusion explains how different homogenous markets adopt different technologies (Meade & Islam, 2006). An example of this occurred in electrical current and outlet fixtures around the globe. A variety of prong standards and voltage level standards occurred globally based on homogenous national markets. These markets had sufficient geographic and geopolitical power to make independent decisions. This led to a misalignment of innovations, which triggered a need for voltage and plug adapters worldwide for travel (USDOC, 2002).

As more complexities in the diffusion of innovations occur, there appears a possibility of combining data-intensive resources to provide agent-based diffusion models (Hall, 2004). Agent-based modeling incorporates a mix of social influences, rational anticipation, elements of uncertainty, heterogeneous distribution, and endogenous information flows via adopter networks driving diffusion. As indicated by

the complexity of inputs, the agent-based diffusion model demands an incredible amount of data and modeling (Gilbert & Han, 2005). To the detriment of the model, "these models require adaptation to and data about the diffusion setting, for example, decision modeling of agents, preferences, network structures, information channels and flows" (Frenzel & Grupp, 2009, p. 46).

In evolutionary models of diffusion, theorists have pointed to a more evolutionary process in the diffusion of innovations. Evolutionary models indicate variety in heterogeneous adopter populations. In addition, the theory also stresses that there always exists imperfect information in a learning environment. "Selection processes, [research and development] allocation calculi, and complex market dynamics need to be identified to use the model" (Frenzel & Grupp, 2009, p. 47). Endogenous diffusion drivers also naturally occur that provide the backdrop for environmental selection (Gray, 2009).

Rogers at the Helm of Diffusion of Innovations Evolution

Rather than being relegated to be part of the history of the diffusion of innovations Rogers (2003) embraced the innovations produced by other scholars. He integrated key parts of them into his core philosophies. From 1962 forward, as scholars focused on the consumer application of diffusion innovation, Rogers injected new insights and methodology into the core diffusion of innovations theory. In the mid-1970s, Rogers focused with laser-like precision on three key core areas that were lacking in diffusion innovation: process orientation for individual decision making, socio-metric analysis, and overcoming the notion that innovations were inherently desirable (George et al., 2012). The shortfall in diffusion innovation required Rogers to construct a new diffusion paradigm composed of six elements. These six elements included the

innovation itself; the diffusion of the innovation over time; the process of opinion influence and personal influence, the process of adoption; the roles played by individuals across adopter categories, and the construct of the social system that serves as the incubator for the diffusion (Rogers, 1983). While this addition was welcomed by scholars, critiques of Rogers's theory indicated shortfalls in fully describing "the interaction between the innovation, the adopter, the social system, and the other influences of adoption, especially how these elements of the theory related to diffusion of innovation within organizations" (Lundblad, 2003, p. 64).

The Evolution of *Diffusion of Innovations*

The original edition of *Diffusion of Innovations* was first printed in 1962. A second edition was published in 1971. In those 9 years alone, approximately 1,500 articles were published relating to diffusion. Reflecting on the updated revision in the early 1970s, Rogers posited:

> One important type of change has been to view the diffusion process in a wider scope and to understand that diffusion is one part of a larger process which begins with a perceived problem or need, through research and development on a possible solution, the decision by a change agency that this innovation should be diffused, and then its diffusion (leading to certain consequences). Such a broader view of the innovation-development process recognizes that many decisions and activities must happen before the beginning of the diffusion of an innovation; often diffusion cannot be very completely understood if these previous phases of the total process are ignored. (Rogers, 1983, p. xvi)

As Rogers published the third edition of *Diffusion of Innovations* in 1983, over 3,000 related publications on diffusion of innovations competed for scholarly attention in the rapidly growing field of study. In the third edition, Rogers revised the theoretical framework while further expanding the research evidence surrounding the diffusion of innovations model. Rogers tightly held continuity between the additions while highlighting key enhancements to the overall framework of the theory. In the updated edition, Rogers strove to criticize diffusion research including his own research so that he could better provide a pathway for future diffusion of innovation advancement. Despite his own criticism, some scholars challenged the endurance of his research and work questioning why a third edition of a theoretical book was necessary. "For those who look at research from a critical perspective, it may seem a contradiction. . . [having] been subject to number of criticisms from both critical and traditional social science quarters over the past decade" (McAnany, 1984, p. 439).

In 1995, Rogers offered the fourth edition of *Diffusion of Innovations* with a cacophony of advancements. With the revision, Rogers included a modification of the key theoretical framework, restructured research evidence supporting the diffusion of innovations model, integrated new intellectual ventures, coalesced contemporary innovation concepts, and presented new theoretical viewpoints. Another major step that Rogers took in the fourth edition included conducting a critical review of over 5,000 diffusion-related publications. The review of literature in the fourth edition incorporated both destructive and constructive criticism of the diffusion of innovations model. Rogers concluded in the edition that the majority of criticisms stemmed from shining a light upon the diffusion of innovations model in inappropriately limited ways or stereotypically

biased fields of study (Rogers, Medina, Rivera, & Wiley, 2005). Criticisms of the fourth edition included a pro-innovation bias and a continuation of calling the final adopters laggards rather than a more innocuous term like last adopters (Meade & Islam, 2006).

In the fifth edition of *Diffusion of Innovations* published in 2003, Rogers prefaced the work by highlighting how the core foundation of his theory remained holistically intact from 1962. The structure erected by researchers on top of that model expanded dramatically based on complimentary investigation. The major changes made in 2003 to *Diffusion of Innovations* included the following:

> (a) changes in the contributions of various diffusion traditions, with marketing, public health, and communication coming on particularly strong in recent years, (b) many studies of the diffusion of new communication technologies like the internet and cellular telephones, (c) expanded understanding of diffusion networks through such concepts as the critical mass and individual thresholds, and (d) the use of field experiments (in addition to surveys) to test the effects of such diffusion interventions as using opinion leaders. (Rogers, 2003, p. xv)

The Rogers Diffusion Framework in Relation to the Air Taxi Innovation

In the evolution of his theory, Rogers (2003) stated that two channels remained critical to communicate new ideas effectively: interpersonal channels and mass media channels. An interpersonal channel includes a range of direct human interaction experiences. These include face-to-face communications, telecommunications, letters, email, social networks, social groups, and other venues that enable human interaction. Mass media includes advertising, publications, television, billboards, on-line outlets, direct mail, telemarketing, and any channel that allows for broad strokes of creating

scalable mass awareness (Rogers, 2003). The acceleration of internet adoption has further quickened the gravity of mass media in the diffusion of innovations and information dissemination (Taylor & Perry, 2005).

Five Key Product Attributes in an Innovation

As defined in the definition of terms, Rogers's (2003) theory centers around five key product attributes central to their diffusion potential: relative advantages, compatibility, complexity, trialability, and observability (or communicability). Rogers explained these five terms succinctly in *Diffusion of Innovations*:

1. *Relative advantage* is the degree to which an innovation is perceived as better than the idea it supersedes;
2. *Compatibility* is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters;
3. *Complexity* is the degree to which an innovation is perceived as difficult to understand and use;
4. *Trialability* is the degree to which an innovation may be experimented with on a limited basis; and
5. *Observability* is the degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt (Rogers, 2003, pp. 15-16).

The Three Types of Innovation-Decisions

Rogers (2003) put forward three types of innovation-decisions in the social system into his model. These innovation-decisions include (a) optional innovation-

decisions, (b) collective innovation-decisions, and (c) authority innovation-decisions. The optional innovation-decisions involve a decision by an individual to either adopt or reject with independence from others. While there may be influence from their social networks, the distinctive nature of optional innovation-decisions indicates relatively autonomous decisions. These optional innovation decision makers serve as a critical component of the classical diffusion model created by Rogers. Next in the Rogers model, collective innovation-decisions engender joint conclusions for individuals to either reject or adopt an innovation made in consensus. Finally, authority innovation-decisions in the Rogers model involve a decision made by a few individuals in positions of authority affecting a larger group of individuals (Rogers, 2003). This last category caused the rise in the theory of institutional conditions for diffusion. This approach argues that social elements working within a wider system either decelerate or accelerate based on cultural factors. Scholars have indicated that they "see such cultural factors as adding to relational understandings of diffusion, as pointing two distinctly hundred outcomes, and as suggesting alternative designs for diffusion analyses" (Strang & Meyer, 1993, p. 506).

Five Stages of Knowledge Leading to Three Potential Outcomes

In the Rogers model, the innovation decision process occurs when an individual passes through five stages of understanding an innovation. These five steps include knowledge, persuasion, decision, implementation, and confirmation. This process leads to one of three potential outcomes: adoption, rejection, or discontinuance (Rogers, 2003). The last element, discontinuance, has received limited academic attention in research on the diffusion of innovations Critical research into this arena has indicated a strong need for examination of post adoption decisions to indicate a conceptual framework for

discontinuance (Black, 1983). Despite this being of academic interest in the diffusion of innovations the issue of discontinuance does not fit into the scope of this air taxi study.

The Take-off Period of an Adoption

Diffusion occurs over a time horizon as more adopters accept the innovation. The take-off period of the adoption in the Rogers model typically occurs as the innovation moves beyond early adopters in the first 10% and into the accelerating range up to 35% (Rogers, 2003). This take-off period features the primary area of interest for air taxi use. Previous researchers on aviation innovations have indicated that the take-off point culminates in a manner where acceleration may be extremely significant from that point forward (Shorter-Judson, 2000). Diffusion occurs when an innovation attains successful communication dissemination over time via channels of communication across a socially based system (Rogers, 2003).

Eight Areas of Scholarly Diffusion Research

Across diffusion research, eight central types of diffusion inquiry exist. Each of the areas has a main dependent variable that becomes the focus of research while there are common independent variables. The first type of diffusion research triggers researchers to focus upon a main dependent variable of early awareness of innovations with an independent variable of social system member characteristics. A second type of diffusion research centers on the adoption rate of different innovations within a social system. The independent variables for this research come from the attributes of the innovation. A third type of diffusion research encourages scholars to analyze the innovative nature of the social system members as the main dependent variable. In this scenario, the channel behavior and resource characteristics of the members become the

independent variables. The fourth type of diffusion research depends upon opinion leadership amongst diffusing innovations. In this fourth type of diffusion research, the independent variables are the system and communication channel variables of the social system members. A fifth type of diffusion research targets diffusion networks as the main dependent variable. In this instance, network link patterns between system members structure the independent variable elements. The sixth type of diffusion research explores the rate of innovation adoption amongst different social systems. The independent variables for this area of diffusion research include social system characteristics, system norms, variables amongst change agents, and innovation decision types. In a seventh type of diffusion research, scholars use the communication channel used as the main dependent variable. In this case, the independent variables include innovation attributes, social system characteristics, and system norms. Finally, the eighth and final type of diffusion research explores the consequences of an innovation as the central dependent variable. The independent variables encompass the social system nature, member characteristics, and the natural utility of the innovation (Rogers, 2003, pp. 96-98). In contrary to the theory, researchers have argued that the diffusion of an innovation does not occur solely based upon supply push and demand pull theories (Ardis & Marcolin, 2001). While this counterpoint proves to be academically fascinating, the hypothesis simply challenges the foundational nature of the Rogers diffusion of innovations theory without any scientific ground aside from nihilism. Based on past aviation innovation diffusion research, the Rogers theory holds the academic merit to evaluate the diffusion of innovations for the air taxi industry (Shorter-Judson, 2000).

The Pro-Innovation Bias of Diffusion Research

Rogers (2003) admitted that there exists too much of a pro-innovation bias in the field of diffusion research. He suggested that there are two central causes for this bias. First, research often gains funding by agencies that have a stake in accelerating change. Second, only a successful diffusion of innovations creates an adoption curve that proves investigable by researchers. In contrast, a failed innovation remains relatively invisible. That makes the failed innovation much more difficult for researchers to determine meritoriously why an arena of innovation fails (Rogers, 2003, p. 110). “Because of the pro-innovation bias, we know much more about (a) the diffusion of rapidly spreading innovations than about the diffusion of slowly diffusing innovations, (b) adoption than about rejection, and (c) contribute use rather than about discontinuance” (Rogers, 2003, p. 111). In practice, this pro-innovation bias does not allow researchers to bolster the air taxi industry in a vacuous manner because there must be scientific validation (Stacks & Salwen, 2014). Innovative technologies alone have not advanced the industry (Budd & Graham, 2009).

Reinvention and the Air Taxi Innovation

The concept of reinvention places an interesting twist on Rogers’s (2003) diffusion of innovations theory. As pointed out by Rogers, most of diffusion theory revolves around the concept of an innovation imitated by others. The notion of reinvention suggests that a significant evolution may occur during the diffusion process as the innovation moves from one adopter to another. “Diffusion scholars now recognize the concept of [reinvention] defined as the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation” (Rogers, 2003, p.

180). Scholars have indicated three key principles in the realm of reinvention. First, reinvention often occurs during the implementation of innovations by many adopters. Next, the more reinvention that naturally occurs accelerates the adoption of the innovation. Finally, the more reinvention that occurs leads to a much higher rate of sustainability for an innovation (Rogers, 2003, p. 183). With reinvention in mind, air taxi as an innovation may appear as a reinvention of traditional air charter or even traditional airline travel. The air taxi innovation is the introduction of more affordable air charter that borders upon competing with traditional airline travel. This merits the positioning as a major innovation because air taxi travel bridges a chasm. The evolution from airline travel and historic air charter travel may occur successfully with the more affordable air taxi concept. A reinvention may occur simply because of lack of knowledge of the innovation among adopters (Rogers, 2003, p. 186)). As illustrated by previous studies, knowledge of air charter and air taxi remains extremely limited among typical business travelers and travel agencies (DeLaurentis & Peeta, 2011; Kaps et al., 2001; Psas, Chow, Prewett, & Yttre, 2008). Rogers summarized the possibility of reinvention succinctly in the following quote:

> Recognition of the existence of reinvention brings into focus a different view of adoption behavior than that originally held by diffusion scholars. Instead of simply accepting or rejecting an innovation, potential adopters are on many occasions active participants in the adoption and diffusion process, struggling to get meaning to the new idea as the innovation is applied to their local context. This conception of adoption behavior, involving reinvention, is in line with what

> certain respondents in diffusion research have been trying to tell researchers for many years. (Rogers, 2003, p. 187)

Stages of Change and the Air Taxi Innovation

Another relevant aspect of diffusion of innovation theory for the air taxi world stems from the notion of stages of change (Checchio, 2011). Originally proposed by Prochaska, Rogers (2003) integrated the ideas into his diffusion of innovation theory. This model envisions five key stages occurring in the innovation decision process. First, the knowledge stage involves precontemplation. This knowledge stage includes recalling information, comprehending messages, and exercising the required knowledge that will enable effective innovation adoption. Secondly, the persuasion stage demands that the potential adopter pursue active contemplation. This entails a genuine liking of the innovation, discussing this newfound like with others, accepting the core message of the innovation, forming a positive image of the innovation, and embracing support for the acceptance of the innovation from one social system. Third, a decision stage indicates preparation. During this stage, the potential adopter displays a full intention to find out more about the innovation. The potential adopter also indicates that he is ready to try the innovation. Fourth, an implementation stage occurs as indicated by action. During this stage, the adopter acts to acquire more information about the innovation, begins utilizing the innovation at regular intervals, and continues active use of the innovation. Fifth, a confirmation stage transpires indicating that the adopter has moved into a maintenance mode. This stage includes a full recognition of the innovation's benefits, integration of the innovation into the adopter's life, and initiating active promotion of the innovation to others (Rogers, 2003, p. 199). As related to the air taxi industry, survey results have

previously indicated a very receptive audience in the first two stages of innovation adoption (Espinoza, Garcia, Goycoolea, Nemhauser, & Savelsbergh, 2008). When applied in practice, however, the results have fallen dramatically short in the implementation stage because of a lack of integration into existing travel-booking methodology (Wall, 2009).

The Bass Model and Communication Channels for Innovations

According to Rogers (2003), one of the most important scholarly additions to diffusion of innovation theory occurred when Professor Frank Bass put forward the Bass model. This model postulates that two core communication channels sway innovation adopters: interpersonal channels and mass media channels (Norton & Bass, 1987). Mass media influences adoption over the entire diffusion time horizon, but much of the influence occurs in the earlier stages. The interpersonal channels trigger an expanding base of adopters during the diffusion process' first half while, but the cascade effect declines after that point. This theory gave rise to the S-shaped cure typically seen in diffusion of innovation (Mahajan et al., 1990). The Bass model furthered diffusion theory with two major contributions. First, Bass created a forecasting methodology built around the diffusion rate. This enabled the predominance of the S-shaped curve working across a wide range of products. Secondly, the Bass model provided the basis for a mathematical formulation of adoption rates. This packaging of the diffusion of innovation theory into a mathematical formula afforded both marketing scholars and the business community a set of usable tools applicable across a wide range of new innovation products (Rogers, 2003, p. 209). The model also allows for the estimated inflection point calculation across a cumulative number of adoptions with quantitative research. This point of inflection

effectively estimates when market saturation will begin to occur on a time horizon. The Bass models function best when applied to a single nation with congruent mass media channels and interpersonal communication norms (Mahajan, Muller, & Bass, 1995). As Rogers (2003) noted, very few investigations of the Bass model have occurred in developing nations where a lack of mass media outlets might lead to a very different analysis outcome. From Bass' research, Rogers added a key generalization into the diffusion of innovation model: "Mass media channels are relatively more important than interpersonal channels for early adopters than for later adopters" (Rogers, 2003, p. 21) . The point of inflection during adoption of an innovation indicates an accelerating number of adoptions with a significant takeoff ramp (Rogers, 2003, p. 211).

The Innovation Decision Process in Relation to Air Taxi

In diffusion of innovation theory, the innovation decision period encompasses the period of time that an organization or individual go through the process of deciding on an innovation. This period normally occurs between two points: from when the organization or individual gains first knowledge of an innovation to the point where they decided to reject or adopt the innovation. Key researchers from the 1960s proved two additional generalizations for diffusion of innovations theory: (a) awareness knowledge of an innovation occurs at a rate significantly faster than the rate of adoption and (b) the earlier stage adopters have significantly shorter innovation decision cycles than later adopters. The innovation decision process occurs in the shortest period of time for the innovators, early adopters, and early majority. In contrast, the late majority and laggards have much longer innovation decision processing (Rogers, 2003, p. 214).

In relation to air taxis, awareness remains a significant weakness among surveyed businesses and travel agents. In a peer-reviewed article from the *Journal of Air Transportation Worldwide,* the limitation of awareness knowledge proved to be remarkably prevalent. The study's authors used a tripartite investigative approach to determine knowledge of the innovation among potential air taxi business travelers, travel agents for these businesses, and mass media attempts to reach these target audiences. The results of this business study indicated that 28% of the surveyed businesses had considered utilizing air taxi products. When businesses responded as to where they would seek advice for securing air taxi services, the responses fell into three main groups: 12% indicated that they would use business search resources, 20% indicated that they would turn to in-house travel personnel experts, and the majority (68%) stated that they would turn to their travel agent. The fact that businesses indicated that they would turn to a travel agent for their expertise and knowledge on air taxis appears to be a genuine attempt to gain expert external knowledge. In this instance, the experts overwhelmingly did not have the needed knowledge: 97.3% of travel agents representing a total of 38 travel agencies of various sizes indicated that they had no knowledge of how to conduct air taxi bookings. A scant 2.3% of the travel agents indicated limited knowledge of air taxi booking procedures; moreover, only 13% of travel agents indicated that they would use search options to determine how to book an air taxi flight. Fully 50% of travel agents indicated that they would ask commercial airlines how to book an air taxi flight. The remaining 37% of travel agents stated that they had no idea how they would seek advice for booking an air taxi flight. As the study's authors concluded, "these results reinforce the fact that agencies have no methodology in place for clearing quoting or booking [air

taxi] products, more importantly they have no knowledge of where to look for answers" (Kaps et al., 2001, p. 104). This proves to be a key point when factoring in the Rogers diffusion of innovations theory. In the innovation decision process, the importance of interpersonal channels remains less important to earlier adopters. For later adopters, the interpersonal channel holds a high level of importance in conducting the persuasion function (Rogers, 2003, p. 212).

The Internet Effect on Diffusion of Innovation as Related to Air Taxi

In the 2003 update to *Diffusion of Innovations,* Rogers tackled a key issue central to this study's analysis of combining air taxi travel options into the existing internet-based booking system. Rogers sought to demonstrate how the internet is changing the innovation decision process. Rogers posited the belief that the internet effectively serves primarily as a mass media outlet, but also as an interpersonal communication channel when the message is genuinely individualized. One specific internet-fueled example cited by Rogers is that of Hotmail launched in 1996. Within 18 months, the free e-mail service had mushroomed to 12 million users because every e-mail message generated by Hotmail included a message at the bottom encouraging users to get their own free e-mail account at Hotmail.com. This message came directly from a friend or colleague, so that made the advertisement highly personalized crossing the boundaries of both a mass media message and an interpersonal communications channel. "Thus a message promoting Hotmail is included in every e-mail message sent by means of Hotmail created an S-shaped curve of cumulatively increasing promotional messages" (Rogers, 2003, p. 216). The internet effectively incorporates both mass media and social networks to enhance further the

effectiveness of the takeoff point along the traditional diffusion of innovations S-curve (Mukhopadhyay, Samaddar, & Nargundkar, 2008).

Replacement Discontinuance of Commercial Air Travel to Air Taxi

After adopting an innovation, there exists the possibility of two different types of discontinuance. The adopter may replace the innovation with a superior innovation in an act of replacement discontinuance. As an alternative, dissatisfaction with the attributes of the innovation may lead to disenchantment discontinuance (Rogers, 2003, p. 217). A previous example of effective replacement discontinuance in aviation stems from the diffusion of jet travel as a replacement for both piston and turboprop aircraft. The replacement followed a very traditional S-curve over time. In this aviation example, the replacement discontinuance occurred at a more rapid rate for piston aircraft and at a slower rate for turboprop aircraft. This diffusion of innovations example served as a central example point in a peer-reviewed conference paper article entitled “Challenging the S-Curve: Patterns of technological substitution.” The researcher argued that while replacement discontinuance occurred in many instances, overall growth in certain sectors such as aviation mitigated traditional replacement discontinuance (Dattee, 2007). This replacement discontinuance theory underlines the possibility that air taxi travel may further accelerates and enhance air travel options without cannibalistic impinging upon traditional commercial airlines to their complete detriment (Forbes & Lederman, 2007).

Statistical Analysis of Potential Innovation Adopters

From a statistical perspective, adopters will segment along the S-shaped adopter distribution curve that naturally occurs in the diffusion of innovations. In this frequency of distribution, the statistics enable the determination of several different characteristics.

The first of these is the average or mean ($\bar{x}$). With the mean calculated, adopters fall into their respective five categories based on the number of standard deviations their answers place them away from the mean ($\bar{x}$). This denotes that innovators stand in the area from the first innovator to the mean minus two standard deviations ($\bar{x}$-2sd). The early adopters place between the mean minus two standard deviations ($\bar{x}$-2sd) until the point of the mean minus one standard deviation ($\bar{x}$-1sd). The early majority position in the area between the mean minus one standard deviation ($\bar{x}$-1sd) and the mean ($\bar{x}$). The late majority contains the area from after the mean ($\bar{x}$) to the mean plus one standard deviation ($\bar{x}$+1sd). Finally, the laggards hold statistically in the area from the area from the mean plus one standard deviation ($\bar{x}$+1sd) to the end point of adoption (Rogers, 2003). The statistical approach to the five adopter groups denotes where, with $\bar{x}$ as the mean and *sd* representing standard deviations. The five adopter groups place into their respective categories based on appropriate areas calculated by the mean and standard deviation. Previous researchers studying air taxi innovation have indicated penetration primarily by innovators along with some early adopters in the business world (Krane & Orkis, 2009).

The Five Adopter Types and the Alignment to Air Taxi

The five types of adopters occur more frequently in adopter categories based on their socioeconomic status, personal values, and communication behavior style. There exists an incorrect perception by many that older individuals appear less likely to be adopters than younger individuals do. In refute of this supposition, researchers applying the diffusion of innovations have indicated that early adopters occur across all ages with no significant age difference from later adopters. From a socioeconomic status perspective, studies have proven several key factors that makes an individual more likely

to be an early adopter. These include a propensity of higher social status, higher literacy rates, upward mobility potential, and more years of education. In addition, from a socioeconomic vantage point they remain more likely to be wealthier and "have larger-sized units (farms, schools, companies, and so on) than do later adopters" (Rogers, 2003, p. 288). These tendencies among innovators and early adopters align with the typical attributes of the business travelers most likely to use air taxi service (Krane & Orkis, 2009).

In the realm of personality values, several generalizations reached by Rogers (2003) illustrate tendencies among earlier adopters. Earlier adopters tend to have a greater empathetic nature, less dogmatic perspective, enhanced preponderance of ability to deal with abstractions, increased rationality, greater intelligence, favorable perception towards change, and better coping mechanisms for both uncertainty and risk. These same earlier adopters tend to embrace a more amicable attitude to science, feel a greater ability to control their own destiny, view the world with a less fatalistic outlook, and have higher lifetime aspirations (Rogers, 2003). In relation to likely earlier adopters for air taxi services, these traits align closely with concerns indicated by non-adopters for air taxi services in previous scholarly research (Fagerholt et al., 2009; Kaps et al., 2001).

From a communication perspective, studies have revealed a wealth of commonalities among earlier adopters. Earlier adopters generally embrace more social participation, ordinate in a highly-interconnected manner across social networks and have a more cosmopolite network than later adopters have. The cosmopolite attribute specifically means that their interpersonal networks tend to be outside their local social

system rather than being simply limited to those around them. The following quote paints an accurate picture of the cosmopolite earlier adopter from a communication perspective:

> The innovator is a member of a system but is a cosmopolite, oriented outside of the system. The innovator has weak ties to other members of the system. This orientation frees the innovator from the constraints of the local system and allows him or her the personal freedom to try out previously untried new ideas (Rogers, 2003, p. 291).

Several other communication behaviors illustrate a more complete picture of the likely characteristic of earlier adopters. These include more contact with change agents, enhanced exposure to communications from mass media, more interpersonal communication channels, an inquisitive nature about innovations, an enhanced knowledge of innovations, and a stronger degree of opinion leadership among their peers (Rogers, 2003). These characteristics align with the purpose of this study focusing upon diffusing air taxi information through existing communication channels. The prevalence of the internet as a flight-booking tool has commoditized air travel. In addition, the internet has encouraged much more self-service air travel with readily available universal pricing information (Granados, Gupta, & Kauffman, 2011).

Critical Mass of Adoption of Air Taxi Travel

For the full diffusion of air taxi travel to occur, the innovation must reach the critical mass point where further diffusion becomes self-sustaining in nature. The critical mass point for adoption occurs when a sufficient number of individuals have adopted an innovation. After that point, the innovation's rate of future penetration into the marketplace via adoption becomes truly self-sustaining in nature (Rogers, 2003, p. 344).

Decentralized Diffusion Using the Internet for Air Taxi Innovation

In the realm of air taxi travel, the use of existing internet structures should allow for the creation of a decentralized diffusion system. As Rogers (2003) defined, a decentralized diffusion system allows for a horizontal spread among like-minded people in a nearly spontaneous manner. Local innovators work with adopters to accelerate the adoption cycle. This mirrors the marketing activities and local promotion conducted by air taxi companies. In the air taxi paradigm, local air taxi innovators enable spontaneous adoption across a specific geography in a horizontal manner. The diffusion of an innovation typically occurs after centralized research and development trigger a change agent to affect opinion leaders and reach adopters (Rogers, 2003). The methodology differences between a centralized and decentralized diffusion system denote significant divergences. As a diffusion of an innovation occurs, two potential routes unfurl that the diffusion will take. Traditionally, a centralized diffusion occurs after research and development. A change agent often triggers opinion leaders and the adopters from a centralized structure. In contrast, a decentralized diffusion system relies upon local innovators actively working with adopters to trigger the desired change (Rogers, 2003, p. 397).

The diffusion of the air taxi innovation appears to closely match the description put forward by Rogers on decentralized diffusion systems that "are most appropriate under certain conditions, such as for diffusion innovations that do not involve a high level of technical expertise among a set of users with relatively homogeneous needs and conditions" (Rogers, 2003, p. 399).

Social Change via the Air Taxi Innovation

As the current researcher examined the effects of social change, there remains an importance in exploring Rogers's views on the consequences of innovations. "Consequences are the changes that occur to an individual or to a social system as a result of the adoption or rejection of an innovation" (Rogers, 2003, p. 436). While the air taxi innovation holds the promise of speeding people along more direct flight paths, the innovation also holds a hidden danger of increasing social inequality. The existing social system structure partially predetermines the equity level. "When a system's structure is already very unequal, the consequences of an innovation (especially if it is a relatively high-cost innovation) will lead to even greater inequality in the form of wider socioeconomic gaps" (Rogers, 2003, p. 471). In relation to this point, the diffusion of the air taxi innovation remains reliant upon the internet to serve as a decentralized diffusion accelerant. This falls directly into Rogers's realm of the digital divide: a gap that occurs between those who are able to easily access the internet and those who cannot (Rogers, 2003). This approach aligns with previous air taxi industry efforts to use the internet alongside existing travel booking methodologies to serve as a decentralized diffusion accelerant:

> A collaborative association, Air Taxi/Air Charter Association (ATXA) was also formed to "bring on-demand air travel to mainstream travelers worldwide" . . . to establish standards such as Global Distribution Systems (GDS), which would permit on-demand carriers to have the same on-line fare visibility to potential passengers as airlines to potential customers. (M. D. Moore, 2012, p. 7)

Summary

The research application of the Rogers diffusion of innovations theory and the associated methods in the review of literature prove the positive application potential for the air taxi innovation. The themes in the literature consistently underline the rational nature of diffusion theory for application to the air taxi problem statement for this research. While there exists a wealth of diffusion and travel related research, there remains a dearth of research bridging the two disciplines. Approximately 80% of the examined articles used survey research, further underlining the application in this study. Through this approach, the researcher bridged a gap in existing literature for the air taxi travel innovation.

With a dearth of existing qualitative and case study research on the air taxi innovation, conducting quantitative analysis on the air taxi innovation would prove premature for the air taxi innovation in the Rogers tradition. The approach taken aligns with the need for a researcher of the diffusion of innovations to effectively capture the diffusion in motion across a social system. Rogers' criteria requires that the case study approach used by the researcher align data points across a multiplicity of participants as to better enable the researcher to illustrate the diffusion process.

In Chapter 3, the researcher will discuss this methodology as well as the methods used in this qualitative case study research which incorporates incorporating longitudinal customer data information alongside the snapshot interview.

Chapter 3: Research Method

Introduction

In travel, the diffusion of a technological innovation often occurs as an incremental implementation of a previous invention. Such is the air taxi, which offers nonstop air travel options to businesses at lower price points. This study used a qualitative analysis of the choices made by business travelers who have used the ImagineAir taxi service throughout the United States. The Rogers diffusion of innovation theory served as the conceptual framework for the study. To understand this phenomenon, the researcher utilized a semistructured interview to investigate the diffusion of the air taxi innovation across business travelers of ImagineAir in the United States.

Chapter 3 begins with a review of the research design and rationale. The design section covers participant selection logic, instrumentation, and data collection instruments, followed by the procedures for recruitment, participation, and formal data collection. According to the formal data analysis plan delineated in this chapter, the researcher used qualitative data analysis software to enhance the rigor of the analysis and research trustworthiness. Additionally, the researcher presents a detailed outline of ethical procedures.

Research Design and Rationale

Qualitative research methodology provides the opportunity to engage complicated issues while retaining the ability to reduce them to their essence(Bernard & Bernard, 2013). Case study design has the most complex elements out of the qualitative traditions as well as a diffuse degree of interaction which parallels the air taxi industry, making it

the best suited research design for inquiry into the diffusion of air taxi innovation (Marshall & Rossman, 2010).

For the ImagineAir business travelers in the United States, this suitability comes through by carefully combining the semistructured interview with historical customer use data, as outlined in the research questions (shown in Appendix D) and bounded by Rogers's diffusion of innovations theory.

The researcher then applied the Rogers (2003) diffusion of innovations framework upon the resulting data from these questions. The aligned customer data points provided the current researcher with longitudinal information and firm timeframes for each anonymized individual surveyed for the research. With data analysis, these questions may provide new qualitative answers to the concept at the core of this study by examining the diffusion of the innovation across ImagineAir business travelers discovering how the air taxi innovation was communicated via channels over time across the social system.

With the Rogers (2003) diffusion of innovations framework, the qualitative case study works as the best methodology in this instance for a multiplicity of reasons. With the air taxi innovation, the technologically distinct situation with many variables of interest required a multifaceted qualitative methodology for success. Next, the researcher triangulated the data for qualitative validation to align with the Rogers diffusion of innovations methodology. Finally, the qualitative case study enabled the development of theoretical propositions following the Rogers diffusion of innovations methodology that may be more easily used by future researchers (Yin, 2014).

As an additional data point for the selection of this research design methodology, this dissertation initially began as a quantitative study. Repeatedly, the quantitative research design did not meet the academic rigor required for a dissertation, partially because it lacked the foundational qualitative base for its structure. Qualitative case study research reifies theoretical concepts and thereby enables future quantitative research (Yin, 2014). In the qualitative tradition, this research followed the case study model that Rogers himself underlines as the most appropriate methodology in a complex innovation shift of this nature (Stacks & Salwen, 2014). In addition, an examination of the other four major qualitative approaches demonstrated a clear process of elimination. Ethnography does not work properly as a viable methodology to apply the Rogers (2008) theory against air taxis since the limited space in the aircraft themselves would not allow live observation of passenger subjects (Van Maanen, 2011). Quantitative grounded theory would not function properly in the theoretical confines dictated by Rogers (2003). Biography proved too limited to consider because a diffusion of innovations requires more than a specific individual. Phenomenology would not function because the essence of an air taxi experience could not be captured to the level in order to explain the overarching diffusion of the innovation itself (Bryman, 2012).

Role of the Researcher

In conducting the research of a qualitative case study, the researcher bears a responsibility to study events and collect data from individuals with context from their real-life environment. The researcher also must work to accommodate each of the study participants. The semistructured interview approach provided an overarching guideline, but the current researcher bore a responsibility to inquire in a manner that enables

individual expression while making certain that the questions receive the fullest answer possible. A strong researcher bears a responsibility not only to ask excellent questions, but also to be an equally excellent listener. The researcher must be adaptive to the interview environment but have a firmly entrenched understanding of the key issues involved in the area of research. Most importantly, the researcher must minimize preconceived ideas about the results of the study prior to conducting the interviews as this may otherwise influence the results (Yin, 2014). In qualitative case studies where data comes from semistructured interviews, the researcher bears a responsibility to guide the interviewee into an extended discussion. In this extended discussion, the interviewer must align their efforts to discover what the interviewee knows, believes, and may be encouraged to share with proper dialogue (Rubin & Rubvin, 1995).

In conducting full disclosure as the researcher, there exists an obligation to reveal any professional relationships with participants in the study. In advance of conducting the research, the researcher determined that he does not knowingly have any personal or professional relationships with any of the participants in the ImagineAir database. If either the researcher or participant recognized otherwise the course of the interview, then that particular participant's interview data were discarded to avoid any improper influence of the study. This strong approach was required due to the researcher's previous professional capacity leading the Air Taxi Association (ATXA), an international air taxi and air charter association formed to aid in the acceleration of the emerging lower cost, on-demand industry. Any recognition expressed by participants of the researcher's previous role may skew their responses. In addition to protecting the researcher's identity, the researcher fulfilled his obligation as an objective researcher by bringing

impartial skepticism to the research role. This skepticism sought to question and challenge any positive bias perceived towards the air taxi innovation. Rogers stated that there exists a positive, natural bias of researchers investigating the diffusion of innovations (Rogers, Singhal, & Quinlan, 2008). The researcher freely admits that he has a favorable bias towards the air taxi innovation based on his work in the industry. To compensate for this bias and for any natural bias from the researcher's history in the air taxi industry, the researcher took a neo-positivist approach to the interview. The neo-positivist approach encouraged the researcher to act as a tool for the research (Qu & Dumay, 2011).

The current researcher fully disclosed all other ethical issues to avoid any conflict of interest. In his role as President of ATXA, the researcher has forged relationships with air taxi carriers across the United States and Europe. Initially envisioned as a quantitative research project in 2006, the researcher believed that he would take advantage of his relationship with DayJet to secure an ample quantitative customer database for analysis. After DayJet's bankruptcy in 2008, the researcher started down another quantitative path envisioning a relationship with ImagineAir. After numerous attempts at a quantitative approach, the academic investigator shifted to a more appropriate qualitative approach contained in the current dissertation. During that time, the researcher had conducted consulting work for ImagineAir as an air taxi company. This included strategic planning and conducting an offering for additional capital and combination. During those efforts, the researcher suggested combining efforts with another air taxi carrier named Kavoo in the northeastern United States. This merger occurred in 2014. Despite the merger, the researcher remained focused on the customer data for the United States because it

provided a more robust and contiguous data source for this research. Prior to executing the study, the author accepted a position as Chief Marketing Officer of BlackJet. At the time, BlackJet was the largest by-the-seat private jet booking company in the world leveraging technology to book customers on licensed FAA Part 135 air charter/air taxi operators. In advance of accepting the position, the researcher received a conflict of interest waiver for this dissertation research and other on-going consulting efforts related to air charter/air taxi initiatives. ImagineAir concurred that the acceptance of the BlackJet role with a conflict of interest waiver would allow them to provide unimpeded access to their customer database. Finally, after proposal acceptance, the author accepted a position as Chief Executive Officer of the Airline Passenger Experience Association (APEX). As a four-decade old non-profit, APEX serves nearly every major airline and airline vendors worldwide with a focus upon airline passenger experience both in-the-air and on-the-ground. At the start of 2017, the CEO role at APEX further expanded to include concurrently serving as CEO of the International Flight Services Association (IFSA). For over 50 years as a non-profit association, IFSA has served the in-flight airline services business including catering, beverages, duty-free marketplaces, and personal-touch soft products for aircraft.

The researcher's history in air taxi requires an extra level of awareness of natural bias (Qu & Dumay, 2011). It is important for researchers to first disclose their bias and indicate how they will compensate for any natural bias. In this instance, while there are relationships with corporate participants, the researcher proactively structured the interview to take a neo-positivist approach. Additional safety steps included recording the conversation as disclosed and holding those recordings for 5 years. This provided an

additional layer of safety with the researcher knowing that academic reviewers may review the source material for academic integrity to minimize potential bias.

The author's work disclosed here with ImagineAir made him a trusted outside partner. That trust afforded full access to their customer database and their customers. In addition, the researcher convinced ImagineAir that insight to the diffusion of innovations would be valuable not only for the industry's growth, but also for ImagineAir's future growth. The air taxi carrier accordingly offered a $200 future credit on ImagineAir for customers selected to participate in the current qualitative case study. ImagineAir viewed this incentive as an appropriate *quid pro quo* for their customers because of the depth of study required and the time impact on high net worth customers. For commercial air travel, $200 would be a significant sum. In air taxi air travel, with an average trip cost of $2,000, the flight credit would average only 10% of the cost of one trip. That smaller percentage impact enabled ImagineAir to make the generous $200 offer to the study participants.

Introduction to the Methodology

A qualitative case study does not holistically reflect the overall population, but it does allow a researcher to conduct detailed investigation of contextual realities utilizing multiple interviews and multiple sources. The semistructured interview case study, supplemented by additional real-world data, serves as an ideal tool to gain understanding of complicated, real-life situations that merit a depth of understanding (Noor, 2008). This approach, aligned with the Rogers (2003) diffusion of innovations theory, produced a wealth of valuable new qualitative information. In detailing the methodology below, the author of the research will first offer an explanation of participant selection logic. The

researcher will then continue detailing the instrumentation approach and data collection instruments. With this explained, the current author will outline the procedures for recruitment, participation, and data collection. The conclusion of the methodology portion will culminate with the researcher reviewing the data analysis plan.

The researcher driven, qualitative case study using a semistructured interview holds a high regard in both social and business sciences. A social scientific investigator interprets, constructs, and deconstructs the social reality observed via domain assumptions, assessment procedures, and logical forms. “[S]ocial research is first and foremost a social enterprise. We view theory as a social process constructed by theorists and research as a social process carried out by researchers, both processes taking place within a social context” (Feagin, Orum, & Sjoberg, 1991, p. 31).

Participant Selection Logic

The population selected for this semistructured interview consisted of selected customers who have flown an ImagineAir air taxi in the United States at least once. In the qualitative data collection, the author contacted the 1,000 most recent lead passengers from the ImagineAir air taxi customer database. The current author selected 1,000 as the proper number of potential participants based on previous response ratios indicated by ImagineAir for previous surveys with flight credit provided as the incentive. Thus, the current researcher captured customers who have used the air taxi travel methodology at least once. In addition, this researcher aimed to capture frequent airline flyers. For the 1,000 invited participants matching all listed criteria, the researcher sent an offer to participate via e-mail as outlined in Appendix A. This offer included the $200 ImagineAir credit and was limited to the first 35 individuals that decided to participate.

The researcher determined that 35 participants aligned with several qualitative academic reasons. From an academic perspective, the researcher discovered that in qualitative research a required sample size does not exist. “Qualitative sample size may best be determined by the time allotted, resources available, and study objectives” (Mason, 2010). Despite this wide berth, the researcher found points of additional academic guidance for a suggested minimum of 15 (Flick, 2014) and suggested maximum of 50 in qualitative case studies (Ritchie, Lewis, Nicholls, & Ormston, 2013). In an academic review of over 1400 qualitative case study Ph.D. dissertations furthered narrowed by inclusion guidelines, Mason determined that the median number of participants surveyed was 33 and the mean at 36 (2010). This coincided closely with the number of interviewees for this research set at 35. From a resource perspective, this calculation aligned with 35 being the maximum number allowed based on ImagineAir’s total allowance for flight credit of $7,000 based upon guidance from ImagineAir that the $200 credit level would be necessary to attract time from high net worth business travelers. The participants signed up via a web consent form outlined in Appendix B for a selected telephone interview time. The researcher assured all participants of the privacy of their information and explained that their information would not be attributed directly back to them. The researcher recorded calls for quality assurance and academic review. The researcher will maintain these recordings for a period of 5 years after the completion of the dissertation. Following the interview guide in Appendix C and the questions as listed in Appendix D, the research conducted a semistructured interview with each volunteer participant. The researcher completed each semistructured interview in approximately 30 minutes.

Instrumentation

The qualitative data analysis plan required transcription of all interviews, a procedure of coding the text data for analysis, analyzing the text for both actual and open coding, codifying the qualitative data against each of the research questions, and then culminating by representing the results in the Rogers (2003) diffusion of innovations format. The product from this work was a detailed Rogers diffusion of innovations outline and matrix. The researcher then interpreted, explained, and demonstrated strong areas of commonality; outlined areas of incongruity; and indicated areas meriting further research.

Data Collection Instruments

The data collection instrument was the semistructured interviews, which the researcher conducted via telephone at a prescheduled time on a digitally recorded telephone line as disclosed to the participant. In addition, data collection from the ImagineAir customer database provided an exact timeline of use of air taxi service. The researcher enforced this exact timeline to supplement customer memory and to cross-reference in the qualitative analysis conducted. As supported by other research, the researcher used the three suggested principles of qualitative case study data collection. First, the researcher gathered multiple sources of data to provide a triangulation of evidence. Second, the research author directed his efforts towards to a centralized case study database for examination in the current dissertation. Third, the researcher maintained a chain of evidence as indicated by the recording of the semistructured interviews. The digital recording format allowed for external observation and checks as needed to meet the highest standards of case study research (Yin, 2014).

Procedures for Recruitment, Participation, and Data Collection

The researcher selected candidates from ImagineAir's database. The researcher selected the most recent 1,000 customers who had traveled on ImagineAir air taxi in the United States. The researcher emailed an offer to participate as outlined in Appendix A to potential participants, but the participation pool was limited to the first 35 participants. Via an automated system, the participants picked a time window convenient for the phone interview. The researcher collected data both orally and then in written fashion on a recorded line utilizing the semistructured interview approach outlined in Appendix C and the questions as outlined in Appendix D. All data for each participant were recorded in a single call. The researcher integrated the corresponding ImagineAir air taxi customer data only after completing the interviews. This approach prevented the researcher from inadvertently being polluted with prejudicial data in advance of the semistructured interview itself (Gillham, 2005). As outlined in Appendix B, the researcher explained the semistructured interview process and the scope of the research to the participants. At the beginning of the semistructured interview, the researcher described the exit plan so that the participant remains assured of not only the intended interview timeline without interruption, but also the potential to debrief at the end of the interview without formalities. When the semistructured interviews were complete, a debriefing occurred at the interviewees' discretion, in which they could ask any questions or interact with the researcher without restrictions (Boeije, 2009). No additional follow-up procedures were required; the Rogers (2003) diffusion of innovations case study approach does not require secondary interviews in this instance.

Following in the tradition of case study research, data analysis consisted of utilizing the framework of the Rogers diffusion of innovations model to conduct pattern matching and explanation building alongside a time-series analysis of diffusion (Yin, 2014). The predicted pattern for the air taxi innovation was to follow the Rogers (2003) diffusion of innovations timeline with the majority of current use conducted by innovators or early adopters in a typical diffusion of innovations S curve. This theoretical proposition forms the baseline for interpreting the data (Trochim, 1989). As outlined, the Rogers diffusion of innovations theory provides a descriptive framework that allowed explanation of variance between the typical Rogers pattern and other results that may trigger additional research in the future (Rogers et al., 2008). As disclosed in the detailed explanation below, the researcher used MAXQDA software to further analyze the qualitative data gathered.

Issues of Trustworthiness

Even with the infrastructure of Rogers's diffusion of innovations qualitative case study research requires in-depth understanding of the data collected in order to build greater credibility and trustworthiness. This involves inductively analyzing evaluating emerging themes from the general to the specific results. That level of data analysis may be supplemented with qualitative data analysis software (Lewins & Silver, 2007). To assure trustworthiness with individual participants, the current researcher assured all participants of their anonymity and confidentiality. Their answers will not be individually identifiable in the publication of this dissertation, based on the highest standards of quantitative research (Lazaraton, 2013). In addition, the approach taken in this qualitative case study lends itself to confirmability so that it may be confirmed and cooperated by

other researchers by the audit-trail approach taken in the results, triangulation around the participants, and reflexivity provided by the researcher in detailed self-disclosures conducted in this body of work (Anney, 2015).

Qualitative data analysis provides additional insights into semistructured interview text data. Utilizing content analysis algorithms, qualitative data analysis software provides additional insights without forcefully suggesting interpretations. Effectively used, qualitative data analysis software increases the trustworthiness with supplemental credibility, transferability, and dependability of qualitative case study research. While not required, this makes the use of qualitative data analysis software highly desirable in this instance. To that end, the researcher used MAXQDA software to further analyze the qualitative data gathered. MAXQDA pioneered qualitative data analysis software from 1989 forward that has been used in similar dissertation projects at Walden University and other leading universities. In addition to accepting the direct text data of the semistructured interviews and customer database, MAXQDA holds the advantage of being able analyze the audio files captured in the interviews as an additional supplement to the trustworthiness of this study (Lewins & Silver, 2007). The limitations of the software proved negligible for the purposes of this study because the software has programming to handle all desired qualitative permutations (Franzosi, Doyle, McClelland, Rankin, & Vicari, 2013).

Ethical Procedures

Accurate case study research requires religious adherence to ethical standards inclusive of developing ethical protocols to ensure participant confidentiality and eliminate any elements that could potentially inflict harm. This requires ethical review of

the research process, questions, data collection, data analysis, data interpretation, and research results (Bryman, 2012). In addition, ethics dictate that the central research problem of the case study should ultimately be beneficial to participants of the study (Yin, 2014).

As outlined in Appendix A, the introductory e-mail to the selected participants from the ImagineAir customer database described the purpose, the benefit, monetary compensation, and permission to leave the study. The landing page in Appendix B provided an opportunity to schedule the semistructured interview at a time most convenient to them. In addition, the landing page captured the participants' informed consent in advance of participation. In addition, the informed consent captured the electronic signature permission to record the interaction for academic analysis. These recordings will be electronically stored in the cloud and password protected by the researcher for a period of 5 years after the publication of this dissertation. Finally, the informed consent outlines the stipulation that they not discuss the interaction with any other customer of ImagineAir for a period of 2 weeks to avoid contamination of other subjects. This includes not disclosing the interview on social media or other publicly available forums until after this 2-week period elapses.

In keeping with Walden University's strict confidentiality guidelines, the researcher held all information collected during this study in the strictest of confidence. In keeping with Walden University research guidelines, all information collected during the semistructured interview will be secured for a minimum of 5 years and will never be personally identifiable.

These ethical issues also required prior advance approval from ImagineAir as they are offering their customer database and financial incentives to participate to their customers without any benefit aside from the final dissertation project itself. Even with these considerations made, Walden University Institutional Review Board (IRB) permission must first be received before research is conducted upon ImagineAir's customers. The researcher will record the DOI number from Walden University after the initial oral defense of the current dissertation and the receipt from the IRB. As business professionals, the participants in this case study are not from potentially vulnerable populations where additional special ethical strategies might otherwise be employed (Yin, 2014). During the processes of data analysis and interpretation, the researcher protected the confidentiality of the specific companies and individuals involved while following the highest standards of qualitative inquiry and research design ethical procedures (Myers, 2013).

Summary

The qualitative case study research methodology applied in this chapter met the criteria for successful execution utilizing the Rogers diffusion of innovations framework. The research design and rationale perfectly matched the ability to execute an effective study of this nature on ImagineAir's business travelers in the United States. The role of the researcher discussed in this chapter not only covered overarching principles, but also the special circumstances that enabled this study to occur as a trusted outside partner. The methodological approach in this chapter proves beyond a doubt that the qualitative case study approach provided a robust set of data utilizing the Rogers framework. Participant selection logic demonstrated how the researcher effectively eliminated potential bias,

encouraged participation, and conducted matching participant data checks. The instrumentation approach allows for open coding of the transcribed text in the use of redundant data collection instruments. The addition of customer database information after the interview allowed triangulation that further improves the reliability of the case study results. The procedures for recruitment, participation, and data collection allowed successful execution with outlined contingency plans to ensure research success. The researcher enhanced data trustworthiness with qualitative data analysis software providing enhanced insights to the semistructured interview text data. The researcher addressed multiple layers of ethical considerations to the benefit of all those involved in the study with Walden University IRB approval.

Chapter 4 includes the qualitative case study details and results.

Chapter 4: Results

Introduction

Based on the Rogers diffusion of innovation theory, the purpose of this qualitative case study was to explore the dissemination of air travel choices made by business travelers using ImagineAir air taxi service in the United States. As discussed previously, the six research questions guiding this study are: (a) How was the ImagineAir air taxi innovation communicated via channels over time in the social system? (b) What are the business traveler perceptions of relative advantages, compatibility, observability, trialability, risk, and complexity of the ImagineAir air taxi innovation? (c) Which communications channels enabled business travelers to first learn about ImagineAir air taxi? (d) What timeframe and events led from first knowledge of ImagineAir to first booking, second booking, and beyond? (e) What self-described Rogers adopter type does the ImagineAir business traveler perceive themselves to be? (f) What business workplace environment enabled the business traveler to try ImagineAir?

The researcher begins this chapter with a description of the setting in which the data were gathered. The researcher then presents the relevant demographic characteristics of the participants and describe the data collection alongside the data analysis procedures. Next, the researcher discusses evidence of the study's trustworthiness, present the results of the study and concludes with summaries of them.

Setting

The geographic dispersion of participants made it necessary to conduct the interviews by telephone. The researcher conducted them at a time selected by the participants, all of whom approved my request to record the exchange. This process

allowed the participants to respond to the questions in a location of their choice, providing convenience and privacy. The canvasser presumed that this privacy and convenience would enable them to give more detailed responses.

Demographics

As study candidates, the researcher selected the most recent 1,000 customers from ImagineAir's database that had traveled on ImagineAir air taxi in the United States. This approach taken by the researcher thereby excluded any individuals that may have booked one reservation with ImagineAir and then cancelled without using the service. The researcher e-mailed an invitation to participate (see Appendix A) to all candidates and limited participation to the first 35 participants. Table 1 depicts their relevant demographic characteristics.

Data Collection

The researcher scheduled a one-on-one, semistructured, telephone interview with each of the 35 participants. The interviews, which were digitally audio-recorded, averaged 12 minutes each. There were no deviations from the data collection procedure described in Chapter 3, nor were any unusual circumstances encountered.

Table 1

Participant Demographics

Participant	Gender	Self-reported adopter type	Reported number of months since the participant first heard of ImagineAir
1	M	Early adopter	18
2	M	Early adopter	60

Table continues

Participant	Gender	Self-reported adopter type	Reported number of months since the participant first heard of ImagineAir
3	M	Early majority	30
4	M	Early adopter	10
5	M	Early adopter	72
6	M	Early adopter	Did not recall
7	M	Early adopter	84
8	F	Late majority	36
9	M	Early adopter	18
10	M	Early adopter	36
11	M	Early majority	24
12	M	Early adopter	60
13	M	Early adopter	48
14	M	Early adopter	72
15	M	Late majority	60
16	M	Early adopter	48
17	M	Early adopter	96
18	M	Early adopter	72
19	M	Early majority	60
20	M	Early majority	60
21	M	Early adopter	36
22	M	Early adopter	48
23	M	Early majority	36
24	M	Late majority	144
25	M	Early adopter	72
26	M	Early adopter	24

Table continues

Participant	Gender	Self-reported adopter type	Reported number of months since the participant first heard of ImagineAir
27	M	Early majority	60
28	M	Early majority	36
29	M	Early adopter	48
30	M	Early majority	36
31	M	Early majority	30
32	M	Early adopter	48
33	M	Late majority	48
34	M	Early adopter	12
35	M	Early adopter	96

Data Analysis

The researcher sent the recorded interviews to a professional transcription analysis company held under non-disclosure per Walden University policy. The transcription service provided approximately 140 pages of single-spaced transcriptions. The researcher uploaded the transcriptions into MAXQDA software for analysis. The data analysis occurred in two coding cycles. In the first cycle, open coding, the analyst broke the data down into discrete parts, closely examined them, and compared them for similarities and differences (Saldaña, 2016). The researcher used pattern coding as the second cycle data analysis method. In conducting pattern coding, the analyst identified codes that indicated emergent themes. These emergent themes captured by the researcher were based on the similarities and differences among the discrete parts of data identified during open coding (Saldaña, 2016). There were no deviations from the data analysis method described in Chapter 3. In addition, the researcher encountered no unusual

circumstances during data analysis. Table 2 depicts that codes that emerged during first-cycle open coding, the themes that emerged during second-cycle pattern coding, and a representative quotation included for each theme.

Table 2
First-Cycle Codes, Second-Cycle Themes, and Representative Quotations

First-cycle codes	Second-cycle theme	Representative quotation from theme
Digital communications; face-to-face verbal; own approval enough; necessity; combination	How the ImagineAir air taxi innovation was communicated via channels over time in the social system	We only have 13 people in our home office here in Birmingham, so it was fairly old school. It was a face-to-face conversation. (Participant 31)
Cost: advantage; cost: potential disadvantage; cost: disadvantage; car: time; car: comfort; car: safety; car: access; comm air: access; comm air: time; comm air: no TSA; comm air: scheduling flexibility; risk: one pilot-one engine; risk: small business; risk: weather; complexity: uncomplicated; complexity: complicated	Business traveler perceptions of relative advantages, compatibility, observability, trialability, risk, and complexity of the ImagineAir air taxi innovation	You can access small airports and go from point to point. Flying commercially is an enormous hassle, with huge delays. The expense of getting to and from an airport. The waits on our security, TSA, and the like. Essentially, the ability to go point to point at my own schedule, not an airline schedule, and the notion and the reality that I spend no more than a few minutes at the airport before boarding, are the big advantages. (Participant 1)
Company rep; friend or family; online; other customer; peer-coworker; publication; word of mouth	Which communications channels enabled business travelers to first learn about ImagineAir air taxi	I just did a basic internet search, and ImagineAir popped up, and I called and spoke with them, and that's how I found them, and that's how I started using them. (Participant 15)

Table continues

How-why first try; progression of events; year or time gap	What timeframe and events led from first knowledge of ImagineAir to first booking, second booking, and beyond	The first time we ever tried it was because we knew we had an upcoming meeting, surrounded by bookend appointments in different cities and in order to make that meeting we honestly could not make the commercial travel work. (Participant 2)
Early adopter; early majority; late majority	What self-described Rogers adopter type the ImagineAir business traveler perceive themselves to be	I'm an early adopter. (Participant 17)
Collective; combination of specific change agent and collective; specific change agent; no permission needed; cost-benefit analysis; own approval enough	What business workplace environment enabled the business traveler to try ImagineAir	I'm the CEO of our company, so I just make that decision on my own. (Participant 25)

Evidence of Trustworthiness

When effectively used, qualitative data analysis software increases the trustworthiness of results. This research approach provided academics with supplemental credibility, transferability, and dependability of qualitative case study research. While not required, this made the employment of qualitative data analysis software extremely desirable in this instance. To that end, the researcher employed MAXQDA software to further analyze the qualitative data gathered. MAXQDA pioneered qualitative data analysis software that has been used in similar dissertation projects at Walden University and other leading universities. In addition to accepting the direct text data of the semistructured interviews and customer database, MAXQDA had the advantage of being

able to analyze the audio files captured in the interviews as an additional supplement to the trustworthiness of this study (Silver & Lewins, 2014). The limitations of the software proved insignificant for the purposes of this study because the software has programming to conduct all desired qualitative permutations (Franzosi et al., 2013).

Results

The researcher organized the report of results in this chapter by research question. Results connected to the first research question indicate how the ImagineAir air taxi innovation was communicated via channels over time in the social system. In the instance of the second research question, results indicate the following facets: business traveler perceptions of relative advantages, compatibility, observability, trialability, risk, and complexity of the ImagineAir air taxi innovation. Findings associated with the third research question indicate which communications channels enabled business travelers to first learn about ImagineAir air taxi. Results associated with the fourth research question include participants' descriptions of what timeframe and events led from first knowledge of ImagineAir to first booking, second booking, and beyond. In relation to the fifth research question, results indicate what Rogers adopter type the ImagineAir business travelers perceive themselves to be. Findings associated with the sixth and final research question indicate what business workplace environment enabled the business travelers to try ImagineAir.

Research Question 1: How was the ImagineAir air taxi innovation communicated via channels over time in the social system?

Participants reported that the air taxi innovation was spread over time in the social system via telecommunications (six participants, 17%) or face-to-face communications

(six participants, 17%). Twenty-three participants (66%) reported that the innovation was not communicated via channels in the social system because the participants were the end-users and final approvers of the air taxi service. Of the participants who reported that the innovation spread through their social system via telecommunications, three participants (10, 20, and 24) reported that the innovation spread via telephone. A different three surveyed (6, 9, and 32) indicated that the innovation spread via e-mail. One participant (24) described his use of the telephone in spreading the innovation:

> You're talking to someone who is 70 years old, and I'm not that keen on technology, but I have a very successful company. Most of what I do is I've got the computer, but in my experiences with this particular product, ImagineAir has been via the telephone, and I have referred many people too, this as being a referral to ImagineAir, who have used it and had great experiences. Virtually all of it is in just dialogue. (Participant 24)

Participant 32 gave a representative response describing the use of e-mail in spreading the innovation:

> E-mail communication. You know, just explaining, “Hey, well, this is what it costs commercially, and here's what it would cost on an ImagineAir, and here's why the time savings would be here,” but all via e-mail would probably be my chosen path. (Participant 32)

Participants 2, 5, 17, 18, 27, and 31 reported that the innovation spread via face-to-face communications. Participant 27 described the face-to-face communications in the social system in this way:

> We have a lot of business travelers in our office and we travel different directions, we travel together, and so the discussion came up I guess in terms of communication between the employees in terms of what's the best way to get from point A to point B the most efficiently. That's probably how that communication was started and that's how the topic was breached. We started talking about it that way. People would provide input saying, "I traveled on this date to this location via this form of transportation," and then people would chime in and offer their opinion on whether they agreed with that method or if they had something they felt would be better or more efficient. (Participant 27)

Participant 31 also offered a representative response: "We only have 13 people in our home office here in Birmingham, so it was fairly old school. It was a face-to-face conversation." Participant 22 reported a combination of electronic and face-to-face communications:

> I was pretty much the champion of it and I initially did some research, got some information from ImagineAir. I put that in the form of an email. It just so happened that I'm a member of a Board of Directors here at the company and once I kind of got this out there at the next board meeting, I was able to talk directly to the other members. It took a little bit of salesmanship because they, like I said, we keep a low overhead, very high profit company. We pride ourselves on our overhead. But, there's a point where the benefits outweigh the ... Definitely, even though the cost may seem a little more substantial, you can tell when it's ... three people are going to spend the night out overnight. There's those intangibles. They're going to miss their kid's softball or some family event. I kind

> of rolled all that together and plus the platinum flight card was, I thought, a pretty good deal. I personally pitched it. I did a combination of e-mail and face to face. (Participant 22)

Twenty-three participants reported that the innovation did not need to spread in their social system because they were both the user of the service and also the authority who made the decision to adopt. Data from these participants will be presented in relation to Research Question 6.

Research Question 2: What are the business travelers' perceptions of relative advantages, compatibility, observability, trialability, risk, and complexity of the ImagineAir air taxi innovation?

Thirty-four participants indicated that ImagineAir's air taxi innovation was compatible or somewhat compatible with their needs. The exception, Participant 33, indicated that the innovation was incompatible with his financial needs. For all participants, compatibility was determined by weighing the relative advantages of conveniences (including time efficiency, access to smaller airports, exemption from passenger security protocols, and flexible scheduling) against the low risks (including that of failure of the single engine or incapacitation of the single pilot, as well as the risk that the small companies would default on advance booking arrangements or be unable to find a substitute plane in the event of a mechanical failure) and the relative disadvantage of the air taxi innovation's higher cost, as compared with travel by car or commercial airline. The participants did not mention observability and trialability as distinct factors

that contributed to the decision to adopt. The complexity of the booking and pricing systems was perceived as high by five participants and as low by 30 participants.

Compatibility with business travelers' financial needs. Participants who mentioned the cost of using air taxis totaled 12. Two participants (24 and 26) referred to the air taxi cost as compatible with their financial needs. Three participants (2, 3, and 21) indicated that air taxi cost was compatible with their financial needs only under certain conditions. Seven participants (7, 10, 12, 21, 31, 32, and 33) indicated that the cost was a definite disadvantage and indicated that the cost had to be offset by advantages before they would use the service. Two participants referred to cost efficiency as an advantage of the innovation. Participant 24 considered ImagineAir's cost to be reasonable, given the amount of time it saved him, stating, "It saves money in the long run. It depends on what value I put on my time, and I put a pretty high value on my time, so I think it's very compatible." Participant 26 stated, "I would say super compatible with my financial needs. Right, so that's extremely compatible there." For Participant 2, ImagineAir was affordable in comparison to the cost of a private jet: "The savings over using a larger private plane, the additional time over using a larger plane, doesn't warrant the cost. So, I can buy a private jet and get there 20 minutes earlier but that doesn't make sense to me."

Three participants described cost as a potential disadvantage that could be mitigated by other factors. Participant 2 noted that cost-efficiency depended on how many people were flying:

> Sometimes you have to evaluate costs versus time, if you can only put one person in the plane. But if you can fill it up, then you start factoring in individuals hourly rate times time, it becomes extremely advantageous to go that way. It's not always

> the best way to go, because sometimes when you have a single person with the roundtrip tickets for $300, it's hard to sometimes make the return work. (Participant 2)

Participant 3 indicated that flying longer distances made cost a disadvantage:

> Sometimes it gets too expensive so I'll look at it when I'm working from places, but I think I kind of found the sweet spot distance that it works well for and you've kind of got to look at road networks to see if driving would not take as long because once you get over a certain number of miles, it starts to get a little pricey on ImagineAir, but yeah, so I guess it works pretty well for most of my needs. (Participant 3)

Participant 21 pointed out that cost became a disadvantage during high-demand flying times:

> The only, you know, the way Imagine does is, is take certain times will be higher than others. So, the only, the only obstacle I ever run into is not that flights are sold out it’s that the flight might be priced out of the range that I'm willing to pay for one way. (Participant 21)

Cost was a disadvantage for seven participants, and they stated that the cost had to be offset by advantages before the innovation would be used. Participant 7 stated, “I've had a couple situations where I've looked at utilizing it and have chosen not to just from an expense standpoint.” Participant 9 spoke of making a judgment regarding the high cost: “Needless to say, it is a lot more expensive, and you just make that judgment.” Participant 10 pointed out that ImagineAir was more expensive than flying commercially:

“There's no question that you can fly commercial cheaper. I think that's a given.” Participant 31 had lessened his use of the service in response to rising rates:

> I would use it more often if the rates were, definitely, 25% less. For some reason, I may be going into too much detail now, the rates seem to have increased over the last year or so, which is one of the reasons I've used it less than I did a year plus ago. (Participant 31)

Participant 32 also found his use of the innovation limited by its high cost: “I definitely could find it in my needs, but however, the financial side is usually the side that limits my ability to use it. As that financial side comes down further, then obviously, it could meet my needs more.” Participant 33 was the only one who described ImagineAir as incompatible with his needs; he indicated that this incompatibility was due to its high cost, and described the service as a luxury, implying that it did not meet a need, but rather catered to a desire for convenience:

> Private travel flight is never economical or compatible when compared to commercial flights. Which is not what you're asking me, but that's the answer. The answer is, it never is compatible, you do it because you can. It's a luxury. (Participant 33)

Relative advantages. All participants (100%) described convenience as the relative advantage that had motivated their adoption of ImagineAir’s air taxi innovation. Participant 7 described how he weighed convenience against cost:

> If I can drive there in 4 hours and I don't have a lot of other things to do, is it worth it to spend more money to have the convenience of getting there faster. It just depends on my schedule. Certainly, in situations where I need to get

> somewhere quickly, or I have little notice, or I have a lot of things going on in my schedule ImagineAir tends to fit that profile better. But that is probably the biggest thing is trying to balance and obviously, everybody has their own price point where it's more...it makes it more reasonable for them to consider a private air taxi. That's gonna be one of those things where some people's price point will be different than others of course. But that's probably the biggest thing is trying to figure out the balance where it's worth the extra cost versus my time and inconvenience of having to drive or finding another means of transportation. (Participant 7)

Participant 12 also spoke specifically about how the convenience of using ImagineAir offset its higher cost:

> ImagineAir is more expensive today than it was when I first started using it 4 or 5 years ago because I think they have gotten a lot more demand than they did back then, but generally, it's not as much of a financial thing for me as much as it is convenience and access to places that I can't get to commercially. It would be kind of a pain in your backside to have to drive 3 or 4 hours to get there, 5 hours, whatever the case may be, so they've gotten more expensive and my reaction now today is that they are not as cost effective as they were, but it's still the convenience and access are so more important to me, and if I have to pay a little extra, I'm doing it. (Participant 12)

Convenience in comparison to car travel. All participants (100%) described the air taxi innovation as more convenient than car travel. Thirty-two participants described the air taxi innovation as more convenient than car travel because of the time it saved; the

exceptions were Participants 12, 13, and 35, who referred instead to the general advantage of "convenience" instead of using the words "speed" or "time." Three participants (1, 10, and 19) referred to the air taxi as more comfortable than car travel. Two participants (2 and 10) referred to the air taxi as safer than car travel. Finally, two participants (12 and 26) referred to the advantage of being able to reach locations by air taxi that would be difficult or impossible to reach by car. Participant 10 offered a response in which he referred to the advantages of time-efficiency, comfort, and safety that the air taxi offered, in contrast to car travel:

> I recently used ImagineAir. It would have taken me 6 hours plus to drive and it took an hour and a half using ImagineAir. The second is just wear and tear. If you travel a lot, driving becomes very boring and there's another factor equally important. I happen to think flying is safer than driving these days. (Participant 10)

Participant 3 referred to reasons why driving was less time-efficient, including traffic and the necessity of passing through cities: "I mostly use it for that because it's about a 45-minute flight versus a 4-and-a-half-hour drive if you don't hit traffic and you go through a couple of larger cities so it's just a huge time saver." Participant 1 spoke of the advantages of comfort and time-efficiency:

> You get to your destination a lot quicker. Driving, besides time, has its wear and tear. Driving is exhausting. What else? It's a convenient saving of time, the saving of wear and tear, and in my case, I happen to enjoy small planes. (Participant 1)

Participant 26 spoke of the superior convenience of air taxis in "getting to relatively remote or hard to get to places from New York City, primarily."

Convenience in comparison to commercial air travel. All participants (100%) described the air taxi innovation as more convenient than commercial air travel. Participants cited four reasons why air taxis were more convenient. Eighteen participants (51%; Participants 1, 3, 4, 7, 9, 10, 11, 12, 14, 21, 22, 23, 24, 25, 28, 29, 32, and 33) stated that air taxis were more convenient than commercial flights because they gave direct access to smaller airports without the necessity of inconvenient layovers at out-of-the-way hubs. Seventeen participants (49%; Participants 1, 2, 4, 5, 6, 17, 18, 19, 20, 24, 25, 26, 27, 29, 31, 34, and 25) indicated that air taxis were more convenient than commercial flights because they allowed air travelers to save travel time. Thirteen participants (37%; Participants 1, 4, 7, 12, 14, 15, 18, 22, 23, 26, 28, 32, and 35) stated that air taxis were more convenient than commercial flights because they allowed the traveler to bypass the airport security protocols that applied to commercial air travelers. Finally, 10 participants (29%; Participants 1, 3, 4, 7, 8, 24, 26, 29, 30, 32) cited the scheduling flexibility of air taxis as a reason why they were more convenient than commercial air travel. Participant 1 offered a response that included mentions of all four of these conveniences:

> You can access small airports and go from point to point. Flying commercially is an enormous hassle, with huge delays. The expense of getting to and from an airport. The waits on our security, TSA, and the like. Essentially, the ability to go point to point at my own schedule, not an airline schedule, and the notion and the reality that I spend no more than a few minutes at the airport before boarding, are the big advantages. (Participant 1)

Participant 4 also cited all four conveniences that were mentioned by other participants:

> It's the ease of it, the simplicity. Being in Macon, I'm an hour and 10 minutes from the airport, but when you take into consideration Atlanta traffic, and then going through security, and then having to be there an hour before flight...I have to leave Macon 3 hours before my flight, when I can leave my office and be in the airport in Macon in 10 minutes. I can leave 15 minutes before flight takes off in Macon and be there on time and they're sitting there waiting on you. Up in the air 10 minutes after that. It's the time saved, the ease of it, not dealing with security, the flexibility of it. (Participant 4)

Participant 32 described getting around security, having access to more airports, and having more flexible flying schedules as advantages that contributed to time savings:

> Easier security lines, or lack thereof, so faster travel time overall. Ability to go into smaller areas, or maybe airports that aren't serviced by the commercial industry. And then, also, the ability to kind of travel on a much more flexible schedule. (Participant 32)

Participant 27 pointed out that when the inconveniences of commercial air travel were factored in, flying commercially was often no more time-efficient than driving:

> By the time I go to a major airport, go through security, wait on a specific departure time, I would say that trip would probably take 4 to 5 hours, as opposed to 6 hours in the car, where ImagineAir would still be that 1.5-hour range. (Participant 27)

Risk. All participants (100%) perceived the risks associated with the air taxi innovation to be acceptable; however, most participants acknowledged the existence of one or more risks. Eight participants (Participants 3, 5, 12, 21, 23, 27, 30, and 31)

mentioned risks associated with having only one pilot and/or one engine in the plane. Participant 21 described the danger of flying with only one pilot and one engine in these terms:

> There's always in a piston engine the risk of engine failure. But I'll also say the risk of single pilot incapacitation is something that I consider, but that doesn't necessarily give me great consternation, but it's definitely something that I'm aware of. (Participant 21)

Participant 23 described a service offered by another charter that allowed passengers to pay extra for a second pilot:

> When I fly on another charter—I use another charter pretty regularly too—you can choose one or two pilots. You can mandate that you want to fly with two pilots, and I've been in situations on their plane where I was very glad I had another pilot. I've sat there and watched them work, landing, and the chief pilot said, “Yeah, I could have done this by myself, but I was glad to have another guy because it was hairy up there.” All you need is one comment like that, saying, “I probably could have done this by myself.” We don't want any “probably,” ya know? (Participant 23)

Participant 27 compared the air taxi unfavorably with commercial airplanes that had two pilots and more than one engine:

> The associated risk with a single pilot, single engine airplane, whether it's a mechanical or whether it's maybe something the pilot becomes incapacitated, that's there as opposed to maybe an airplane that has multiple engines and duo pilots. (Participant 27)

Six participants (17%; Participants 3, 14, 20, 22, 25, and 29) mentioned risks associated with ImagineAir's smaller planes' perceived disadvantage in flying in bad weather. Participant 3 said of these risks, "The planes...can't handle weather as well as bigger planes or I think their glide path is a little less than bigger planes." Participant 14 spoke of the inability of the smaller planes to fly over the weather: "The only risk I think about is, the inability, just to be weathered out. The inability to get high enough to get around or above weather, is the only thing I worry about." For Participant 25, the risk associated with weather was of delay rather than of physical danger: "To me, the biggest risk is being stuck in another airport because of bad weather and not being able to get back in time. I don't consider the risk of a crash to be a big risk."

Five participants (14%; Participants 1, 15, 28, 32, and 35) mentioned the risks associated with dealing with small companies that might default through bankruptcy on fees paid in advance or be unable to provide a substitute for planes that experienced mechanical failures before takeoff. Participant 1 described the risks of dealing with small carriers in these terms:

> The risk is, one that I didn't encounter. That is, it's a small airline that has only two pilots that I know of in the northeast. One of the planes, we were taxing, we had a mechanical problem during the run up of the airplane and we turned back, and I was out of luck. They don't have other planes, they didn't have any other way to get me to my destination. So, the risk is of dealing with a small operation. There's a financial risk too, I've paid money in advance for future flights. A small operation is far more likely to go bankrupt and leave me as one of many creditors who will receive nothing because I paid in advance. (Participant 1)

For Participant 15, the risk of using a small fleet was that a mechanical failure might result in a canceled flight, given the lack of spare planes: “Will the plane be there when I want it? I know it's a very small fleet, so my concern, primary concern, is if they have some type of mechanical problem and can't respond when I need the flight.” Like Participant 1, Participant 28 mentioned the risk of a bankrupt company defaulting on an advance payment, describing this as “the risk of buying their pre-purchase program and having them potentially going out of business.”

Complexity. Thirty participants (86%) described ImagineAir’s air taxi booking and pricing systems as uncomplicated. Five participants (14%; Participants 6, 14, 28, 29, and 35) described the booking and/or pricing systems as too complicated either always or under certain conditions. Participant 4, who described the booking and pricing systems as “very simplistic,” described the process in this way:

> You put in where you are, you put in where you want to go, and you put in a day, and it gives you the prices for that day, the day before, and the day after, to kind of give you a little flexibility. Looking at the prices...they kind of break it down into segments as far as morning, noon, afternoon. It shows you...obviously it's supply and demand. If they got them open, it's gonna be less. Or if the plane is already supposed to be closer to where you are, obviously it's going to be less expensive. And then you can do a one way, or you can add a return trip for it. So, where you are, where you want to go, and the date, and it spits out the price. And I do like that they do the day before and the day after. If there's a big difference in price, it might sway your options. (Participant 4)

Participant 7 specifically praised the convenience and simplicity of the online booking system:

> I think it's great. I will tell you, that's gotten better. The ability to go online, without talking to someone and price this out is really, really nice and not have to ... especially if I don't have a lot of time today to make phone calls, it's nice to be able to come in at night, look at availability, look at price point and not have to have somebody on the phone or somebody that's gonna get back to me, and me not being able to answer the phone. I think they have done a very wise, thorough job of making it convenient for the customer to see ahead of time again, what the availability is, and what the price point is gonna be. I applaud them for that. That has been very, very good in my opinion. (Participant 7)

According to Participant 10, the telephone booking system was also very simple:

> The process is not complicated. You simply call and tell 'em where to go, where I want to go, and that point we can determine whether or not we can actually get there. Some places there's not an airport exactly where I want to go, but normally there's one very close. For example, I used them last week. I actually wanted to fly in to *Morehead* City, but there's not an airport there. There's one in Beaufort, North Carolina, which is in essence five minutes away. I can usually work that out pretty easily. I just ask for the price when I'm making the booking and they tell me, and I can either determine whether or not I want to pay that price or whether I want to fly commercial. It's a pretty simple process. (Participant 10)

Of the participants who called the booking system complicated, one (participant 6) applied the complaint to the entire booking system, calling it “unnecessarily

complicated" without further elaboration. One Participant (14) described the telephone booking system as easy to use but the online booking system as "reasonably complicated," saying, "I've had minimal success trying to book myself online, but I've always had great success working with people on the phone." The other three participants (28, 29, and 35) who referred to the system as complicated were speaking specifically of the pricing system. Participant 35 described the pricing system in this way:

> Pricing system used to be flat rate pricing...And then they went to this on demand by time variable pricing and I find it to be probably good for them but confusing and the perception as being punitive to the traveler. Oftentimes, I would call for a specific time, be given a price that seemed a lot higher than I was normally paying, and then offered a time 45 minutes away from that requested time for literally 1/3 off the price. So, as a client, it's hard to understand how 45 minutes would make a 1/3 difference in the cost structure. (Participant 35)

Research Question 3: Which communications channels enabled business travelers to first learn about ImagineAir air taxi?

Participants were first enabled to learn about ImagineAir air taxi by word of mouth (17 Participants, or 49%), by searching online (13 participants, or 37%), or through a print publication (4 Participants, or 11%). One participant (Participant 10) did not recall how he had learned of the service. Participants who learned by word of mouth learned from friends or family (seven participants, including 3, 5, 9, 22, 28, 29, and 35), from another customer of ImagineAir (three participants, including 11, 12, and 19), from a coworker or peer (two participants, including 16 and 27), through personal communications with an employee or owner of ImagineAir (two participants, including

13 and 31), or through unspecified word-of-mouth communications (three participants, including 14, 18, and 21). Participant 3 said he had learned of ImagineAir through friends:

> I think having talked to some friends that had used ImagineAir and then being a little familiar with the planes they use I kind of knew what to expect. I knew it was going to be a lot different than my commercial airlines flying but I guess I knew what I was getting into. (Participant 3)

Participant 27 first learned about ImagineAir through coworkers:

> Well, there was communication between myself and coworkers talking about using the service. And then there was communication with the ImagineAir staff to, I guess to start using the program and how to effectively use the program. Two levels of communication. One with coworkers about the program and then obviously communication to actually start interacting with ImagineAir employees to book and to fly and stuff like that. (Participant 27)

Thirteen participants (1, 4, 6, 7, 8, 12, 15, 22, 23, 25, 26, 32, and 34) learned about ImagineAir by searching online. Participant 1 described the process of searching online as one of weighing options:

> Looking for a less expensive alternative for a short ride. I initially thought about just getting flight instruction, like I said, I'm a licensed pilot. My thought was to just go up with the flight instructor, pay for the lesson, and have them drop you off in Burlington. Then I saw online, Imagine Air, which was essentially the same thing. So that's how I came to it. (Participant 1)

Participant 15 described the process of searching online and the events that led up to his search in this way:

> We purchased a second vacation home in Hendersonville, North Carolina, which is just outside of Asheville, and it's about a 6 and a half to 7 hour drive, and I was still working at the time, so I was commuting back and forth, and I was looking for an affordable option for air travel other than commercial, and I just did a basic internet search, and ImagineAir popped up, and I called and spoke with them, and that's how I found them, and that's how I started using them. (Participant 15)

Participants 2, 17, 24, and 30 learned about ImagineAir from print publications. Participant 17 learned about the service from a business magazine:

> My memory is that I first found out about ImagineAir from an article in the Atlanta Business Chronicle. We had been increasingly disenchanted with SATSair and when I read the thing about ImagineAir up at Briscoe, I was like, "Why don't we try this?" I don't know if you're from Atlanta. Briscoe is the airport they're based at in a suburban county called Gwinnett County. (Participant 17)

Participants 24 and 30 learned about ImagineAir by reading aviation news. Participant 24 learned about the service from flight magazines while training to be a pilot:

> As a student pilot, I have read about all kinds of stuff in the different flight magazines, and I read about different air taxi services in different parts of the country, and honed into one to where I am, and tried it out. It worked, so just from reading, I probably did a little doodling too, but mostly I was reading. Then I would, of course, go up and examine it. Yeah, it was mostly in I guess Flight

> Transportation ways to get around and how successful they had been in different parts of the country. (Participant 24)

Participant 2's business partner learned about ImagineAir from an advertising brochure:

> Five years ago, I'm pretty sure randomly, my business partner had seen almost like a tri-fold brochure, but it might have been a single-page brochure, long and skinny. And I don't even remember where he saw it, possibly over in the Atlanta area, and randomly remembered the name when we were trying to book that first trip. (Participant 2)

Research Question 4: What timeframe and events led from first knowledge of ImagineAir to first booking, second booking, and beyond?

Participants' estimates of the number of months that had passed between their first knowledge of ImagineAir and the time of their interview for this study are given in Table 1 The mean number of months since participants first heard of ImagineAir was 51, with a range from 10 months to 144 months. Most participants could not recall how much time had passed between their first knowledge of ImagineAir and their first booking; however, the researcher estimated the time between first knowledge and first booking by comparing the participants' best recollections of the date of their first knowledge of ImagineAir with the record of the actual date of their first booking. Table 4 depicts the estimated timeframe as follows: the estimated number of months between date of first knowledge and date of first booking (calculated as the actual date of first booking minus the estimated date of first knowledge), the actual number of days between first flight and second flight, and the actual number of days between second flight and third flight.

Table 3

Estimated Timeframe from First Knowledge to First Booking and Beyond

Participant	Number of months between estimated date of first knowledge and actual date of first booking	Actual number of days between first flight and second flight	Actual number of days between second flight and third flight
1	7	2	76
2	0	1	76
3	7	68	1
4	1	4	N/A
5	0	21	107
6	0	3	67
7	14	1461	N/A
8	3	31	55
9	0	5	443
10	0	1	37
11	11	0	0
12	8	0	1147
13	0	2	N/A
14	0	52	133
15	2	7	1
16	6	0	29
17	0	21	198
18	63	3	0
19	0	107	1
20	0	235	4
21	5	1	240
22	43	0	0
23	1	2	0

Table continues

Participant	Number of months between estimated date of first knowledge and actual date of first booking	Actual number of days between first flight and second flight	Actual number of days between second flight and third flight
24	25	1	140
25	0	294	1516
26	0	N/A	N/A
27	31	0	70
28	0	0	851
29	12	1	36
30	17	21	100
31	0	2	59
32	0	5	12
33	12	183	0
34	7	83	0
35	2	1	67
Mean	8 months	77 days	188 days

Note: *Negative values are replaced with 0, on the assumption that first booking did not occur before first knowledge.*

The event that led from first knowledge to first booking was a decision made on the basis of convenience (in the cases of 30 participants, or 86%) or because the participant was switching from a similar service that had gone out of business (in the cases of five participants, or 14%). Participants' perceptions of the convenience of the air taxi innovation are discussed in detail in the presentation of results related to Research Question 2, under the theme of relative advantages. When participants specifically discussed the reasons why they had decided to try ImagineAir for the first time, they referred to the circumstances of their first booking. Participant 18 spoke of the time savings the innovation offered, given his travel needs at the time: "I was driving two-and-

a-half to three hours when I could fly there on ImagineAir in about 25 minutes, so it's huge time savings." For Participant 29, ImagineAir was the most convenient option at the time of his first booking because of its pricing: "A friend of mine introduced me to ImagineAir and the places that I was going mostly were in the southeast and it was the lowest cost provider in doing so." Participant 2 described a situation in which ImagineAir was the only option, given his travel needs:

> The first time we ever tried it was because we knew we had an upcoming meeting, surrounded by bookend appointments in different cities and in order to make that meeting we honestly could not make the commercial travel work as far as catching a flight for a meeting being in another meeting the next day and then getting a flight out to hit the meeting the very next day. So, we knew the only way we could get there as a function of time, was to do something like, ImagineAir. (Participant 2)

Five participants (7, 10, 14, 28, and 33) reported that they initially decided to make a booking through ImagineAir because they had been traveling with a similar service that had gone out of business. Participant 14 described the situation as follows:

> My first experience with ImagineAir was when I got stranded by a competitor of theirs, who went out of business in the middle of one of my trips and left me hanging in another city and I had to get back to Jacksonville. Had to get back home. (Participant 14)

The other four participants who reported that they had first tried ImagineAir because a competitor went out of business spoke in similar terms. Participant 7, for example, stated:

> So, I needed a trip for an event I was covering, and I had used a prior service. I can't remember if ImagineAir just took over their routes or that business morphed into ImagineAir but somehow or another, maybe it was a Google search, but the old company that I utilized before either somebody from that company recommended ImagineAir or ImagineAir bought their planes, there was some type connection there that I honestly can't remember. That's what got me specifically to ImagineAir. (Participant 7)

Research Question 5: What self-described Rogers adopter type do the ImagineAir business travelers perceive themselves to be?

Self-described Rogers adopter types are reported for each participant in Table 1. Twenty-two participants (63%) considered themselves early adopters, nine participants (26%) considered themselves early majority, and four participants (11%) considered themselves late majority. When numerical values were assigned to the adopter types, such that 1=*innovator*, 2=early adopter, 3=*early majority*, 4=*late majority*, and 5=*laggard,* the mean value reported by participants was 2.49, approximately halfway between early adopter and early majority.

Research Question 6: What business workplace environment enabled the business travelers to try ImagineAir?

Twenty-three participants (66%) reported that they had personally led the adoption of the innovation within their companies. Nine participants (11%) reported that their businesses had integrated the air taxi innovation through the combined influences of collective decision-making and a specific change agent. Three participants (9%) reported

that their businesses' integration of the air taxi innovation had been led by a collective decision-making process.

The 23 participants (3, 4, 7, 8, 12, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, and 35) who reported that they had personally made the decision to adopt the air taxi innovation were typically leaders in their companies. Participant 25, for example, stated, "I'm the CEO of our company, so I just make that decision on my own." Participant 28 was the owner of his business: "I own my own business, so I make all those decisions." Participant 34 was not only the owner, but a sole practitioner: "I'm a sole practitioner, so I did it all by myself." Participant 26 also had no social system through which to diffuse the innovation: "I am a private investor so there's no workplace integration." Participant 24 said, simply, "I just dictate." Participant 33 was the only one in this group who was not a leader in his business, but the decision to adopt the air taxi innovation was still his to make: "I actually didn't look for any approval internally. I opt to pay the differential between commercial travel and ImagineAir personally, when it comes to business expenses."

Participants 1, 9, 10, 11, 13, 14, 15, 20 and 32 reported that the integration of the air taxi innovation was led in their companies by a combination of collective decision-makers and specific change agents. Participant 1 described the process of integration as, "An executive who champions an idea and a group of people whose buying is required." Participant 1 added that permission to use an air taxi was given or withheld according to the results of a cost-benefit analysis:

> It occurs from having a senior member of the business doing a cost benefit analysis of the additional expenditure of private travel versus the time savings and

> the increased flexibility of being able to accomplish more with less wear and tear on the people who need to do travel. (Participant 1)

Participants 2, 5, and 6 reported that the integration was led by a collective decision-making process.

Summary

The central purpose of this qualitative case study was to explore the dissemination of air travel choices made by business travelers using ImagineAir air taxi service in the United States based upon the Rogers diffusion of innovation theory. To achieve this, the researcher conducted one-on-one, semistructured telephone interviews with a sample of 35 of the 1,000 most recent customers who had traveled on ImagineAir air taxi in the United States. The researcher used six research questions to guide the study.

The first research question provided by the Ph.D. candidate to the participants was, "How was the ImagineAir air taxi innovation communicated via channels over time in the social system?" The majority of participants reported that the innovation did not need to diffuse through a social system because they (the participants) were both the user of the innovation and the authority who had made the decision to adopt. Other participants reported that the innovation was communicated by e-mail, telephone, or face-to-face conversations.

The second research question presented in the academic's engagement was, "What are the business travelers' perceptions of relative advantages, compatibility, observability, trialability, risk, and complexity of the ImagineAir air taxi innovation?" All but one participant viewed the air taxi innovation as compatible with their travel and financial needs. The relative advantage of the innovation over car travel and commercial

air travel was convenience, which participants found in the ability of air taxis to reach destinations that could not easily be reached by car or commercial flight, in the privilege of bypassing airport security, in the time they saved by using air taxis, in the comfort and safety of air taxis, and in the flexible scheduling offered by ImagineAir. Risks were considered acceptable but included the safety risks associated with flying in a one-pilot, one-engine plane; the risk of being delayed or harmed by bad weather; the risk that a carrier with a small fleet would be unable to provide a substitute plane in the event of a mechanical failure; and the risk that a small carrier would go bankrupt after receiving an advance payment. Almost all participants considered the complexity of ImagineAir's booking and pricing systems to be advantageously low. The participants did not mention observability and trialability as distinct factors that contributed to their decision to adopt.

The third research question conducted in the researcher's query was, "Which communications channels enabled business travelers to first learn about ImagineAir air taxi?" About half of participants first learned of the innovation by word of mouth (e.g., from friends, family, coworkers, or other customers of ImagineAir). Other participants learned of the innovation by searching online or through print publications, including aviation magazines and advertising brochures.

The fourth research question posed by the researcher queried, "What timeframe and events led from first knowledge of ImagineAir to first booking, second booking, and beyond?" An estimated average of 8 months passed between participants' first knowledge of ImagineAir and the booking of their first flight. Most participants made the decision to book according to the considerations of convenience discussed in relation to Research Question 2, although a minority of participants made the decision to book

because they had been using a competitor of ImagineAir's that went bankrupt. An average of 77 days passed between participants' first and second flights, and an average of 188 days passed between participants' second and third flights.

The fifth research question placed before participants by the researcher was: "What self-described Rogers adopter type do the ImagineAir business travelers perceive themselves to be?" Twenty-two participants (63%) considered themselves early adopters, nine participants (26%) considered themselves early majority, and four participants (11%) considered themselves late majority. When numerical values were assigned to the adopter types, such that 1= *innovator*, 2 = *early adopter*, 3 = *early majority*, 4 = *late majority*, and 5 = *laggard*, the mean value reported by participants was 2.49, approximately halfway between early adopter and early majority.

The sixth and final research question put forth by the academic inquiry was, "What business workplace environment enabled the business travelers to try ImagineAir?" Two-thirds of participants were enabled to try ImagineAir by a business environment in which the decision to use the innovation was entirely at their discretion. For most of these participants, this decision-making power existed because they held a leadership position in their company. About one fifth of participants were enabled to try ImagineAir by a workplace environment in which the new mode of travel was integrated through the combined influence of collective decision-making and a specific change agent. For the remaining participants, the workplace environment was characterized by collective decision-making.

Chapter 5 includes interpretation of these results and their implications.

Chapter 5: Interpretation, Recommendations, and Conclusion

Introduction

Air taxi travel is severely underutilized, despite its many potential benefits to the country's economy (Stimpson et al., 2017) and the need for more efficient air travel alternatives (Baik et al., 2008; Stimpson et al., 2017). In addition, little is known about how business travelers become aware of and opt for a newer means of air travel. Thus, the purpose of this qualitative case study was to understand the dissemination of air travel choices, based on Rogers's (2003) theory of diffusion of innovation, as expressed by business travelers using ImagineAir air taxi service in the United States . The perspectives of business travelers were obtained via interviews and analyzed using MAXQDA software.. The results of this study are described in relation to the following research questions:

RQ1. How was the ImagineAir air taxi innovation communicated via channels over time in the social system?

RQ2. What are the business travelers' perceptions of relative advantages, compatibility, observability, trialability, risk, and complexity of the ImagineAir air taxi innovation?

RQ3. Which communications channels enabled business travelers to first learn about ImagineAir air taxi?

RQ4. What timeframe and events led from first knowledge of ImagineAir to first booking, second booking, and beyond?

RQ5. What self-described Rogers adopter type do the ImagineAir business travelers perceive themselves to be?

RQ6. What business workplace environment enabled the business travelers to try ImagineAir?

The study revealed emerging themes regarding the perspectives of business travelers on air taxi travel. In RQ1, the researcher explored how ImagineAir air taxi services were communicated over time in the social system. The findings indicated that the air taxi innovation was disseminated mainly through telecommunications and face-to-face communication; however, a majority of the participants reported that the innovation was not communicated because the participants were chosen as users of the service. Telephones and e-mail were also used to spread the word about the air taxi service by ImagineAir.

In response to RQ2, the researcher explained the relative advantages, compatibility, observability, triability, risk, and complexity of the air taxi innovation. To determine the compatibility of the air taxi service, the participants compared the relative advantages of convenience and low risks. The participants also considered convenience in comparison to commercial air travel and car travel as important in weighing the compatibility of the air taxi service.

In response to RQ3, the different communications that enabled the business travelers to learn about the air taxi service wereword of mouth, online search, and print publication.

The participants' answers to RQ4 determined the time frame and events that led from their first knowledge of the service to the first booking, second booking, and beyond. The range was found to be between zero and 63 months of learning about the air taxi service to the first booking with the average being eight months. The average number

of days between first booking and second booking was 77 days. The answers to RQ5 demonstrated self-reported adopter types of the participants, while the answers to RQ6 revealed how the business workplace environment enabled business traveler to try the air taxi service. The main enablers were collective decision-making and specific change agent.

The findings in this study offered evidence on the benefits of air taxi travel. Results from this study can be beneficial for economical strategies of key decision-makers of a company. In addition, these findings can help the air travel business sector to understand the relevance of the service and to provide solutions regarding the current issues in transportation.

In the next subsection, the researcher interprets the results of the study within the broader context of the literature on air travel service and Rogers's (2003) diffusion of innovations theory. The researcher also discusses recommendations based on the limitations of the current study, implications of the results, and conclude the chapter with a summary.

Interpretation of the Findings

In this section, the researcher divides the interpretation of the results based on the research questions of the study. Both RQ1 and RQ3 explored the communication channels that were used to dissemination information regarding the air taxi service. RQ2 pertained to the perceptions of the business travelers regarding the use of air taxi service as an alternative means of transportation. RQ4, RQ5, and RQ6 enabled the researcher to explore the time frame, self-reported adopter style, and the business workplace environment, respectively, of each of the business travelers. These questions enabled the

researcher to capture the contextualization of air taxi travel based on the participants' behaviors and perceptions on air taxis.

Communication Channels and Air Taxi Innovation

Based on Rogers's (2003) model, the innovation decision process begins with knowledge. Thus, air taxi service providers must disseminate information regarding their innovations through different communication channels. The first and third research questions explored the various ways through which the participants learned about and decided to use air taxi travel as an alternative means of transportation. The participants enumerated telecommunication channels such as telephones and e-mail system and face-to-face communication as the channels used to spread the air taxi innovation over time in the social system. Likewise, the participants reported that they learned of the air taxi service through word of mouth, online search, and print publication. Of these channels, the internet was a prolific means to disseminate information regarding the air taxi innovation.

These results provide supporting data points on how the internet is a critical factor in the success of innovations and decision-making processes (Pandita, 2017; Rogers, 2003). In addition, the internet effectively incorporates both mass media and social networks to enhance further the effectiveness of innovations (Mukhopadhyay et al., 2008; Pandita, 2017). Thus, the internet can be considered as a change agent (Pandita, 2017), even in the context of air travel transportation. Researchers have posited that the internet represents the fastest spreading technological innovation recorded in human history (Pandita, 2017; Rogers, 2003), making the internet a useful communication tool for air taxi travel industry. The interactive communications provided by the internet could

forever shift the speed of future diffusion of innovations processes and further break down information barriers (Pandita, 2017; Rogers, 2003).

The researcher noted the importance of face-to-face communication and word of mouth are perceived as communication channels used to spread information about air taxi services. This reflects the adopter style in the communication perspective, wherein innovations are embraced through social participation and coordinate in a highly-interconnected manner across social networks (Rogers, 2003). Based on the emerging themes, social network information dissemination may result in greater amount of information exposure about air taxi services. Despite this, more research is needed to determine whether exposure to air taxi innovation information is significantly linked to one's decision to opt for this alternative.

The current study's results revealed that the internet and social network are critical in information dissemination, adding further evidence on the notion that two channels remain critical to communicate new ideas effectively: interpersonal channels and mass media channels (Rogers, 2003). An interpersonal channel includes a range of direct human interaction experiences. These include face-to-face communications, telecommunications, letters, email, social networks, social groups, and other venues that enable human interaction. Mass media includes advertising, publications, online outlets, direct mail, telemarketing, and other channels that allow for broad strokes of creating scalable mass awareness (Rogers, 2003). The acceleration of internet adoption has further quickened the gravity of mass media in the diffusion of innovations and information dissemination (Taylor & Perry, 2005).

Perceptions on Air Taxi Innovation

The second research question explored the perceptions of business travelers on the relative advantage, compatibility, observability, trialability, risk, and complexity of the air taxi innovation. The themes that emerged in this research question showed the salient relationships among perceptions on compatibility, on risk, and on relative advantages of this service. The results also showed that the compatibility of the air taxi innovation is determined by evaluating the relative advantages of convenience (e.g., time efficiency, access to smaller airports, exemptions in security protocols, and flexible schedule) and the relative risks (e.g., failure of single engines or single pilots and possible mechanical dysfunctions). The participants also considered the higher cost of the air taxi service as a relative disadvantage compared to traveling by car and by commercial airline.

These results reflect how the participants perceive and relate the different factors that enable them to opt for air travel service for business. As Rogers (2003) stated, one must begin the stages of change by exercising the required knowledge on an innovation to fully use its benefits. Determining compatibility by weighing relative advantages of air taxi travel against its risks and relative disadvantage shows the stage of precontemplation. This knowledge stage is vital in developing a genuine interest in an innovation (Rogers, 2003). Thus, a plausible supposition could be that such decisions by business travelers are pivotal for air taxi providers primarily because ensuring a solid market for this kind of business entails understanding the needs of the people (Rogers, 2003). The results indicated that the air taxi innovation may be fully integrated into aviation marketplace, with its benefits recognized and its risk accepted by the users.

Findings based on this research question also show how the tenets of Rogers's (2003) diffusion framework are useful in understanding the experiences and perceptions of business travelers and air taxi innovation. Relative advantage, compatibility, and risk are demonstrated to be essential in the decision-making processes of the participants. While this could prove to be significant, the current researcher also noted that the participants did not consider observability and trialability as critical factors in the decision to adopt the innovation.

The complexity of the booking and pricing systems was low by most of the participants, which also reflects the benefits of software innovations in ensuring faster transactions and user-friendly interfaces (Rogers, 2003). Internet-based ticketing options have become a useful, innovative, and low-cost alternative (Brueckner et al., 2013). In addition, this adds support to the notion that the internet is changing innovation decision processes by the prevalence of the internet as a flight-booking tool (Rogers, 2003). Furthermore, the internet has encouraged much more self-service air travel with readily available universal pricing information (Granados et al., 2011). Thus, the perceived low complexity of the ticketing and booking systems of air taxi travel is another important factor in the decision processes of the participants in using air taxi services for business travels.

To summarize, Rogers's (2003) diffusion framework was beneficial in understanding the perceptions of business travelers regarding air taxi services. The participants determined the compatibility of the air taxi travel by reconciling the relative advantages connected to convenience with the risks and relative disadvantages associated with car travel and commercial airlines. The perceived low complexity of the booking

and ticketing systems of air taxi services was also an important factor in the decision-making processes of business travelers.

Why Choose Air Taxi Services

In this subsection, the researcher will discuss the results of the fourth, fifth, and sixth research questions together, because the themes revealed showed how the participants perceive the physical (workplace environment) and temporal (timeframe of take-off period) spaces vis-à-vis the choice to use air taxi services. The researcher compiled results showed that the average period between initial awareness of air taxi service and date of first booking is eight months. The average period between first booking and second booking is 77 days. The average period between second booking and beyond is 188 days. Most participants (63%) considered themselves as early adopters, 26% of the participants are early majority, and 11% are late majority. The reasons behind the adoption of air taxi services include influences of collective decision-making and a specific change agent.

These results provide a context regarding why and how business travelers decide whether to integrate air taxi traveling within their company or not. It is interesting to note that 65% of the participants are part of the top management of their companies, which translate to them being the key decision maker regarding the adoption of air taxi transportation. The researcher uncovered how innovation decisions may be done by exercising the authority of one key agent (in this case, the CEOs and managers of the companies). Authority innovation-decisions in the Rogers (2003) model involve a decision made by a few individuals in positions of authority affecting a larger group of individuals. In contrast, some participants also reported that the adoption was made

through collective decision-making processes, which reflects the collective innovation-decision process (Rogers, 2003).

The results of RQ4 regarding the timeframe of the bookings show the period between each booking; however, the current literature lacks objective averages and frequency of bookings via air travel services. It is difficult to contextualize these results based on the broader literature. In addition, the participants did not enumerate the reasons behind each booking. From the researcher's analysis, there remains the possibility that the frequency of bookings was influenced by outside factors such as work necessity, health prohibitions, or others. The possibility of variant causes for frequency of air taxi bookings suggests a need for further studies on this topic.

There are different rationales as to why companies decide to integrate the air travel transportation within their company. While many businesses are driven by decisions from a few key decision-makers, some companies still practice collective innovation-decision. This reflects the social elements working within a wider system either decelerate or accelerate based on cultural factors. While there remains an importance in understanding the behaviors of passengers regarding air travel services, the statistics provided by research question four fail to account for the reasons behind each booking. In addition, the current literature on air travel services lacks statistics regarding criteria on whether the frequency can be considered as high or low.

Limitations of the Study

In this section, the researcher interprets the results of the study in relation to the limitations of the findings in the study. One major limitation was the conceptual fit of the qualitative research design and over-the-phone interview method. The semistructured

interview case study supplemented by additional real world data serves as an ideal tool to gain understanding of complicated, real-life situations that merit a depth of understanding (Bandyopadhyay, 2015; Noor, 2008). While interviews are essentially useful for qualitative analysis, the limitation by the lack of face-to-face communication during the interview may have resulted in an inability to read the mannerisms and social cues of the participants (Yin, 2014); therefore, a change in research method may be useful for future studies to be able to capture the explicit relationships of the themes from the results.

Generalizability is also an issue for this current study. The uniqueness of the experiences of business travelers in regard to air taxi travel may be concentrated on individuals with higher socioeconomic status than applicable to a larger audience. Thus, these results may not be reflective of the perceptions of the general public. The current findings may be useful, however, in understanding the perceptions of business travelers and key decision makers in the company, which could be helpful for air taxi providers.

Recommendations

Based on the results of the study, the researcher recommends that further studies be taken and focused on developing the research design when understanding the perceptions of business travelers regarding air taxi services. If fully used, these air taxi aircraft could dramatically democratize travel so that business travelers could fly directly to nearly any destination in the United States. Utilizing a quantitative design for future research will be beneficial in recognizing the significance of the relationships between each variable. This may also provide knowledge on predictive variables and mediating factors that result to the use of these services.

Moreover, there remains a clear need to more fully understand how the different variables affect the perceptions and experiences of business travelers regarding air taxis. Thus, future researchers can focus on the exploration of each factor and how this relates to the decision to use air taxis as the main transportation for business travelers. Furthermore, there remains a benefit to better understand how the perceptions are different between business travelers and other possible target markets of the air taxi and air charter industry. An analysis of variance (ANOVA) may be appropriate for this. Nuancing the perceptions of different groups of people may help air taxi service providers in customizing their pricing and services based on different markets.

In relation to economic policies, there remains an important investigation in better understanding the role of business travelers in the perpetuation of air taxi transportation. Based on the results, the researcher discovered that most of the consumers of this service are the top management of companies. This discovery highlights a further need to uncover how their position can improve or aggravate the current paradigm of the air taxi business. Furthermore, air taxi service providers must vitally understand how the innovation better incorporates the general public with lower price points, better price elasticity of demand, and the cost benefit of such changes as air taxi providers widen their effective reach.

Implications

The results of the present study offered knowledge on the perceptions of business travelers and their experiences regarding air taxi transportation. The current findings revealed themes that are unique to the experiences of business consumers vis-à-vis the current paradigm of the air taxi transport sector. The findings uncovered by the academic

scholar poses a challenge on the economic policies and innovation strategies of the country, as technologically advanced small aircraft have the ability to significantly lower the price point for air taxi travel (Browne et al., 2016; Harrison et al., 2013; LaHood, 2012). This has not been extensively studied in past literature, and the economic laws for this industry have not been investigated. The findings provided evidence on improving the services of air taxi service providers, not only for the business travelers, but also to be a feasible option for the public. For example, further innovation should focus on cheapening the cost of air taxi traveling, which can potentially be more inclusive and cost-friendly for consumers.

For organizations that are in the air taxi service or intend to go into the industry, the findings offered insights on the importance of effective communication regarding the usefulness of air taxi service. As seen in the results, the two main channels through which information is disseminated are through interpersonal exchanges and the internet. These results showed that proper integration of web technologies may attract more customers. These results may also help company leaders in strategic planning to improve service for patrons and clientele. With 29 hub airports in the United States, which are overwhelmed by 70% of all commercial airline flights, U.S. government researchers have assertively stated a need for change in air travel leveraging 5,000 virtually idle airports alongside over 7,000 available on-demand air taxi aircraft. The problem, however, was that researchers do not know how air taxi awareness will successfully disseminate (Browne et al., 2016; Harrison et al., 2013; LaHood, 2012). These results offer evidence that may be used for the successful integration of air taxi travel within social systems.

Furthermore, these results illustrate the revolutionary position of air taxi travel on modern transportation in the country. From the study, the researcher has uncovered a thread of how air taxi travel may provide solutions to the current transportation issues for positive social changes at the societal level in the United States. Democratizing air taxi travel means that such service would also be accessible and affordable for the general public. Air taxi service providers making their services meet these criteria could enable them to realize their role as innovators in the aviation industry to accelerate technological advancements in air travel. In turn, the air taxi companies must concretize solutions to the current traffic issues of the country.

In summary, the findings of the current study offered emerging themes on the perceptions of business travelers regarding air taxi services. These meanings are reconciled by understanding the relative advantages versus risks and disadvantages of such service. By utilizing the knowledge from the results of this study, air taxi providers are encouraged to provide accessible and affordable air taxi service to the general public.

Conclusion

The purpose of this qualitative case study was to understand the dissemination of air travel choices expressed by business travelers using ImagineAir air taxi service in the United States based upon Rogers's (2003) theory of diffusion of innovation. The researcher results of the study revealed that compatibility, relative advantage, risk, and complexity are factors that influence the perception of business travelers on air taxi services. In addition, the internet has provided a revolutionary avenue for information dissemination and communication regarding the benefits of air taxi travel. For future air taxi and air charter marketplace success, there must be a deeper behavioral understanding

of the current market of air taxi services, and leaders must be able to recognize how these services can be democratized. With this understanding, the researcher recommends future studies with an emphasis on strategies to improve air taxi services for the general public's access.

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Appendix A: Landing Page and Interview Sign-Up

The landing page as outlined in the paragraphs below will be available until 35 interviews have been scheduled. Once the 35 interview slots have been filled, the landing page will indicate the following: “I am sorry, but all of the 35 available interview spots available for this study have already been taken. Thank you for your willingness to participate in this academic study. Please place your e-mail below and I will e-mail should any of the current participants opt-out of the study.”

Until the 35 interview slots are filled, the following page will serve as the body text on the landing page and subsequent web pages:

Academic Interview for $200 ImagineAir Credit

Dear ImagineAir Customer and Academy Study Participant,

Thank you for signing up for this Ph.D. dissertation focusing upon on the future of air travel via on-demand air taxi/air charter. As outlined in the email, to qualify, you must be a **business traveler** traveling in the United States that has **flown ImagineAir at least once** and do not have a professional or personal knowledge of Walden University Ph.D. Candidate Joe Leader. The ImagineAir database indicates that you meet these criteria and proceeding provides consent for use of data contained in the ImagineAir database in manner that protects your anonymity. Since this interview is conducted in English, you must have high-level fluency in English to participate in this study. Please only proceed if you **fully** meet these criteria.

Background

The central purpose of this study is to explore the air travel choices made by business travelers like yourself utilizing ImagineAir air taxi services in the United States. The central focus of the study is how the ImagineAir air taxi innovation successfully communicated via channels over time across the social system. This will allow results that may help facilitate the acceleration of air taxi travel adoption and enable future quantitative studies based upon its findings.

Procedures

Information in this study will be collected by a researcher via interviews with business travelers like yourself. Interviews will last approximately 30 minutes. The researcher will ask you questions relating to the five areas. The first questions will focus on ImagineAir air taxi advantages, observability, trialability, risk, and complexity. The second question set will focus upon the communications channel that allowed you to initially learn about ImagineAir air taxi. Third, the interview will seek to discover the timeframe of your first knowledge of ImagineAir air taxi. Fourth, the interviewer will seek to discover your self-described adopter type. Finally, the researcher will capture a description of your workplace social system that allowed you to utilize the ImagineAir air taxi service. I am also requesting that you allow ImagineAir to release information regarding your flights taken, dates taken, and passenger age. After the Ph.D. dissertation approval, you will be sent an e-mail with an executive summary of the research findings along with a link to the final dissertation.

Voluntary Nature of the Study

Your participation in this study is entirely voluntary. You have highly valuable experience and knowledge as a business traveler in the United States utilizing ImagineAir air taxi. If after selecting a time to participate in this research you thereafter decide that you would not like to continue, you will be free to cancel the interview. Only fully completed interviews will be utilized in the study, but during this research you may refuse to answer any questions that make you uncomfortable in any way.

Risks and Benefits of the Study

No foreseeable risks are associated with your participation in this study. As stated, the overarching benefit of this study is to better understand business travelers like yourself utilizing ImagineAir in the United States.

Compensation

For agreeing to participate in this study, you will be provided a $200 credit to utilize on ImagineAir valid for the next year.

Confidentiality

In keeping with Walden University's strict confidentiality guidelines, all information collected during this study will be held in the strictest of confidence. In keeping with Walden University research guidelines, all information collected during the semistructured interview will be secured for a minimum of five years and will never be personally identifiable to you.

Recording of the Interview

Your interview will be conducted on a recorded telephone line in order for a transcript to be made of the interview by a professional transcription service. The answers will be analyzed both by the researcher and processed by qualitative data analysis software.

Contacts and Questions

Should have any questions about this research, then you may contact the researcher. Ph.D. candidate Joe Leader may be reached directly at joe.leader@waldenu.edu or by phone at +1-678-390-0001. Otherwise, you may contact the chair of the doctoral supervisory committee Dr. Stephanie Hoon via e-mail at Stephanie.Hoon@waldenu.edu or by phone at +1-949-502-1701. If you have any concerns of an ethical nature related to your agreement to participate in the study, then you may contact the Research Participant Advocate at Walden University via e-mail at irb@waldenu.edu or by phone at +1-612-312-1210. Please print or save a copy of this consent form.

Two Weeks of Non-Disclosure

Please do not share the contents of your interview questions or answers with any business traveler that may have traveled on ImagineAir for the two weeks between July 24, 2017 and August 7, 2017. This protects the research study from unintended influence of answers upon others that may participate in the study.

Statement of Consent

I have read the above information and received key answers necessary relating to this research. I consent to participate in the study with a recording conducted of my interview. I consent for data contained on my air travel behavior in the ImagineAir database to be used in this study. I understand that my electronic signature is legally binding, just as if I had signed a paper document. I do not have any professional or personal knowledge of the researcher, Walden University Ph.D. Candidate Joe Leader. I understand at the conclusion of the Ph.D. dissertation process that I will be sent an e-mail with an executive summary of the research findings along with a link to the approved final dissertation. I may print or save a copy of this consent form via my web browser now for my records in advance of signing.

Legal Name and Signature of Participant: _____

Today's Date: _____

Please select the interview time below that best meets your schedule needs.

Appendix B: Interview Protocol

A. Hello is this, _____?

B. Hi _____. This is Joe Leader calling for our scheduled interview on ImagineAir for my doctoral work at Walden University. Does this time still work for well for you?

C. Thank you very much. Before we begin our interview of approximately 30 minutes, I wanted to again affirm that everything that we discuss today will be kept in the strictest confidence. As compensation for your participation, you will be provided a $200 ImagineAir flight credit within two weeks of this interview that will be valid for one year. Access to the research data will be limited in accordance with the confidentiality agreement that you signed before our call. I am required to follow an interview protocol that is semistructured in nature with a list of questions. I may help to provide clarification to the question so long as I do not influence your answer. After our semistructured interview has concluded, I can engage with you in completely unstructured conversation and answer any additional questions that you have. I can only do this at the end of our interview because that allows me to be certain that I do not influence your answers. I also need to request that there be no interruptions to this interview if possible so that we stay within the intended 30 minutes. Do you have any questions before we begin?

D. Thank you. Do I again have your permission to record the entirety of this call?

E. Interviewer will conduct the semistructured interview questions reading only the items in the interview section after headers and colons.

F. Thank you for completing the semistructured interview completely. You will receive your $200 ImagineAir flight credit within two weeks from this interview. When the

research receives final approval from Walden University, you will receive an e-mail notification that will include access to the final work. While we are still being recorded for quality assurance, we are now off the record. Do you have any questions that you would like to ask me or anything that you would like to discuss as we wrap up?

G. Thanks so much again for your time and participation. Once the dissertation is completed and approved by the university, you will receive an e-mail with an executive summary of the research findings along with a link to the approved final dissertation. Thank you again and have a great day!

Appendix C: Semistructured Interview Questions

1. Focusing on the ImagineAir air taxi innovation, the business traveler will provide their perceptions of relative advantages, compatibility, observability, trialability, risk, and complexity.
    a. Relative Advantage:
        i. What are your perceived relative advantages of flying ImagineAir air taxi over driving?
        ii. What are your perceived relative advantages of flying ImagineAir air taxi to you over flying via commercial airline travel?
    b. Compatibility: How compatible do you typically find the ImagineAir air taxi option to you and your flight, travel, and financial needs?
    c. Observability: Before your first flight on ImagineAir, how easy was it for you to understand what your ImagineAir air taxi flight would be like in comparison to your previous air travel experiences?
    d. Trialability: How and why did you first try flying ImagineAir air taxi?
    e. Risk: What do you consider the risks in flying in an ImagineAir air taxi?
    f. Complexity: How complicated do you consider the ImagineAir air taxi booking process and pricing system?
2. Communications Channel: What was the communications channel that allowed you to first learn about the ImagineAir air taxi service?

3. Time: Focusing on the ImagineAir air taxi innovation, the researcher in the section outlined below will focus upon determining the timeframe from first knowledge, persuasion to make first booking, decision to take first flight, implementation as demonstrated by second flight, and confirmation as demonstrated by third flight. The researcher will then solicit the self-described Rogers adopter type for the business traveler.
    a. Knowledge: Approximately, when did you first hear of ImagineAir?
    b. Persuasion: After completing the semistructured interview, the researcher will collect the date of first flight booking whether cancelled or flown as pulled from the ImagineAir database.
    c. Decision: After completing the semi-structure interview, collect the date of first flight flown as pulled from the ImagineAir database.
    d. Implementation: After completing the semi-structure interview, collect the date of second flight flown as pulled from the ImagineAir database.
    e. Confirmation: After completing the semi-structure interview, collect the date of third flight flown as pulled from the ImagineAir database.
    f. Self-Described Adopter Type: When it comes to new technology, please select one of the following from a list of adopter types:
        i. You consider yourself an innovator being one of the first people ever to use a new technology.
        ii. You consider yourself an early adopter being part of the first wave of individuals using a new technology.

iii. You consider yourself to be in the early majority being part of the first major crowd when there is mass adoption of a new technology

iv. You consider yourself to be in the late majority where you wait until a new technology is firmly entrenched before utilizing it.

v. You consider yourself a laggard where it appears that nearly everyone is utilizing a new technology before you put it to use.

4. Social System: What is the workplace social system of internal communications that enabled your adoption of the ImagineAir air taxi innovation by you personally?

    a. In your workplace, how does the process of changing and integrating a new way to travel such as air taxi occur?

    b. Who do you believe shapes the opinion on air taxi flights at your company?

    c. For a change in travel methodology at your company, is it normally led by a specific change agent, a collective decision process in the organization, or a combination of the two?